OCTOBER 15, 1913
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THE COMMERCIAL CAR JOURNAL

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa.

PUBLISHED THE 15TH OF EACH MONTH

CHILTON COMPANY

MARKET & 49TH STS. PHILADELPHIA

Made in France

The A·V·

(A. Vermesch & Cie)

Hydro-Pneumatic Spring

SHOCK ABSORBER

for trucks and commercial vehicles

Eliminates Spring Breakage

Reduces tire wear and prolongs the life of the motor as well as all other parts. Prevents breakage and damage to fragile or delicate merchandise you may be hauling.

A compact and simplified combination of all the desirable features necessary for ideal spring suspension.

More durable than your truck. Easy to mount. Can be placed in the most inaccessible places. Adaptable to all cars and a great economizer.

Catalogues and prices on request; for manufacturers, users, dealers and jobbers

Hudson Export & Import Company

140 West 42nd Street, New York City

RHINELAND MACHINE WORKS CO.
1254 Michigan Avenue, CHICAGO, ILL.
650 Woodward Avenue, DETROIT, MICH.

JOHN V. WILSON COMPANY
1424 Vine Street, PHILADELPHIA, PA.
220 Motor Mart, BOSTON, MASS.

THE PUBLISHERS' PERSONAL PAGE

Hope for the Advertiser

Every day brings nearer the date when circulation facts about all publications will be public property.

For several years the **Chilton Company** has been endeavoring—through the co-operation of advertisers and a few responsible publishers—to have Congress make it obligatory for trade paper publishers to state their circulations in their magazines.

Mr. Simmons, President of the Simmons-Boardman Publishing Company, of New York, who are publishers of Railway Age Gazette, American Engineer and Signal Engineer, has been endeavoring to organize another association to be known as the National Trade Press Association, the object of which organization is to be a campaign for honest circulations and publicity.

That associations of publishers would consider our resolution seriously at three meetings is evidence of the progress that has been made, and it is an encouraging sign that tangible results will be had at no very distant date.

These facts are given to you because we want you to create a desire among your advertisers for an amendment to the Act of August 24th, so that trade journals—as well as newspapers—will be compelled to publish their circulation figures.

We call upon all advertisers and publishers to assist us in the efforts we are making to have Congress make an amendment to the law which now compels daily newspapers to publish circulation statements. When all trade journals print their circulation statements, which are verified by the Post Office, there will be established a confidence between advertisers which will be of benefit to advertiser and publisher alike. You can help bring about this ideal condition quickly by urging your congressmen to work for the amendment to the existing law, which at present applies only to daily newspapers.

Where Ignorance Is Not Bliss

As publishers of the **Commercial Car Journal**, a paper which we are spending large sums of money upon, in order that it may contain useful information to the trade and to truck users, we are daily brought face to face with the most deplorable ignorance on the part of users and drivers. This is not a case of "Where ignorance is bliss, 'tis folly to be wise," for ignorance is not bliss. Ignorance leads to enormous repair bills, trucks out of commission during the rush season, goods not delivered, general dissatisfaction, eventually reacting upon the manufacturer.

It is no surprise that the class of men that drive, are not students, that they are not inclined to study, to read and to learn the things which would forewarn and prevent commercial car troubles. But we are surprised at the lack of knowledge on the part of the owners and of the superintendents of delivery,—men who are supposed to read and assimilate information most important to them in their business relations when using motor trucks.

To get the best from an individual truck or from a large fleet, it is absolutely necessary to know the best methods of arrangement of the delivery system. It is necessary to know every little symptom of distress that may be shown by a truck. Does your delivery superintendent know these things? Do your drivers know these symptoms? Are they students of truck mechanism? Do they know of truck performance in the hands of others?

You Pay the Repair Bill

This may be only $100 or several thousand dollars a year, if your drivers do not know. Don't you think it would pay you to invest one dollar a year for a subscription for each of your drivers to a publication giving just the information they need?

COMMERCIAL CAR JOURNAL,
49th & Market Sts., Phila., Pa.

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The Commercial Car Journal

VOLUME VI PHILADELPHIA, OCTOBER 15, 1913 NUMBER 2

MOTOR TRUCK CLUB MONTHLY MEETING

A goodly number of the members of the Motor Truck Club enjoyed the dinner at the Hotel Cumberland, Wednesday, October 15th. At the meeting which followed, the subject of discussion was on "Traffic and Motor Trucks," the paper being by Dr. E. Pratt, who operates the industrial department of the Merchants' Association of New York. Traffic conditions in New York City were given a large share of attention and some interesting features were brought out. Details of the meeting and papers will be published in our coming issue.

MORE STUDEBAKER BRANCHES BEING TURNED OVER TO DEALERS' ORGANIZATIONS

In pursuance of the Studebaker policy of discontinuing branches, the Studebaker Corporation has turned over to dealers' organizations, their branches in the following cities: New York, Chicago, Minneapolis, St. Paul, Salt Lake City and Denver.

Former branch managers in four instances will be the heads of the new retail concerns. In New York City the Phelps Motor Car Corporation succeeds the branch, continuing the headquarters at Broadway and West Fifty-ninth Street, for retail distribution, while the Studebaker Corporation will handle the wholesale distribution from its horse headquarters, at 142 West Fifty-second Street. George H. Phelps, formerly branch manager, heads the company. In Chicago, the L. Markle Company, headed by former branch manager, Lafayette Markle, has taken the retail business. F. C. Cullen, in Denver, has supplanted the retail branch, with the Automobile Sales Corporation. In Salt Lake City, C. A. Quigley will act as distributor. A. A. Gray, former branch manager, will conduct the retail business in Minneapolis and St. Paul for himself.

FEDERAL AID PROMISED TO BUILD GOOD ROADS

Secretary of Agriculture David F. Houston, speaking at the third annual American Road Congress at Detroit, on September 29, outlined the policy of the federal government with relation to road building. Recently Congress appropriated half a million dollars to be expended in the ratio of one dollar of the government fund to two dollars expended by the state in the betterment of roads now or hereafter to be used as post roads. As the rural routes cover practically every important state road it will be seen that this means government and state co-operation in improvement of all roads. The regular appropriation for the department of public roads is $300,000, so that the department of agriculture is charged with the disbursement of a large contingent fund.

In 1912 the state expenditure for roads was $43,000,000. It is estimated that, aside from the above mentioned sums, there was expended locally in 1912 $175,000,000. Quite significantly a large percentage of this was wasted owing to faulty methods both of construction and of management. The secretary deprecated the ill-judged criticism of a certain class which raised the old cry of centralization and states rights. But in this great field of common interest and in view of the absolute necessity of co-operation he did not believe the mass of the American people would allow such prejudice to defeat the important road movement. The secretary ably summarized the question of federal help stating that it should, in his opinion, follow approximately these lines:

"First, it should require the co-operation of the state in a larger measure in financial support and in construction and maintenance.

"In the second place, it should be understood that the federal government should have adequate supervision and control over the enterprise in each community and guarantee the efficient expenditure of its own funds.

"In the third place, the federal commissioner should deal exclusively with efficient agencies provided and supported by the states.

"In the fourth place, the plan should provide for the apportionment of funds among the states, on the basis of certain essential factors; and,

"Finally, the primary undertaking should be to improve those community roads which are essential for the marketing of products and for the betterment of the physical, intellectual and social side of rural life."

ALCO COMMERCIAL CAR BUSINESS MAY BE CONTINUED

Some of the stockholders in the American Locomotive Company are so dissatisfied with the action of the board of directors of the company, in dropping the motor truck and car department of their business, that steps have been taken towards the formation of a new separate company to take over the Alco automobile department as a whole.

Although it was understood that the American Locomotive Company would not dispose of its automobile business to outside parties, those interested in this new movement are close enough to the management of the company to have this matter reconsidered and it is quite probable that a definite announcement will be made soon, so that the Alco motor truck organization will not have had time to disintegrate to any great extent.

NO LONDON 1914 COMMERCIAL CAR SHOW

The Commercial Vehicle Committee of the Society of Motor Manufacturers and Traders presented a resolution to not organize any exhibition for 1914 at a meeting of the Management Committee on September 18. The resolution was agreed to and hence there will be no commercial car show for 1914.

INTERNATIONAL MOTOR COMPANY'S AFFAIRS QUESTIONED BY STOCKHOLDERS

In December last, the International Motor Company, of New York, negotiated a loan of $1,500,000 with an inside syndicate composed largely of stockholders. In spite of this, it has been found necessary to raise additional working capital. A special meeting for this purpose was called Tuesday, October 7th, with a quorum present, but the meeting was adjourned for one week, at the instance of large shareholders of both New York and Philadelphia, who desire to have certain leading questions answered as to the company's affairs. Tuesday's meeting was called for the purpose of voting on a proposition to place a mortgage of $1,200,000 on the property, which would, of course, become a lien taking precedence of the preferred stock.

It is understood the management has agreed to supply the information asked by the protesting shareholders.

The International Motor Company was formed by a merger of Mack Bros. Motor Company, Allentown, Pa.; Saurer Motor Company, Plainfield, N. J., and the Hewitt Motor Company, New York City.

STEEL-TIRED WHEELS BARRED IN PARIS

Beginning with October 15th, commercial cars with steel tired wheels will be barred from the streets of Paris. All commercial cars must have rubber tires. The same law has been passed in Germany, covering the larger cities. It has been found necessary to take this action because the steel tires not only cause a disagreeable vibration when going through the streets, but—which is even more serious—have been found to cut up the pavements very badly.

CHICAGO ORDINANCE REQUIRES FENDERS ON TRUCKS

An ordinance was recently passed requiring all trucks to carry street car type fenders, becoming effective within ninety days. As there are practically no established fenders on the market, it will be almost impossible for the merchants to comply, as it will take several months to design and perfect such devices. The ordinance is as follows:

"It shall be unlawful for any person, firm or corporation, to use and operate within the city of Chicago any motor car or truck for the purpose of conveying therein bundles, parcels, baggage or wares, merchandise or other similar articles unless said auto car or truck be provided with a fender, as in the case of street cars, operated and used within said city, of such design as may be approved by the board of inspectors of public vehicles."

BROOKS TRUCKS TO BE BUILT BY DURYEA

The Brooks Manufacturing Company's business was recently purchased by Charles E. Duryea, manufacturer of the Duryea Buggyaut. This company has been operating for some time without marked success. The mechanical features of the Brooks commercial wagons were designed by Duryea, and it is understood that for the present the manufacture of Brooks trucks and Duryea Buggyauts will be carried on in the same plant, but plans are said to be completed for the production of these vehicles in the near future in two separate plants.

NEW FREIGHT BILL RULE ANNOUNCED BY AUTOMOBILE CHAMBER OF COMMERCE

General Traffic Department announces that one of the advantages offered by the Chamber of Commerce to members is the opportunity of having their freight bills checked for the purpose of its noting and collecting overcharges. Some members have permitted their freight bills to accumulate, sending them to the traffic department in batches covering from one to two or three years' business. This causes delay and congestion of work in this office as it is more difficult to locate old freight rates through changes, suspensions and cancellations of freight tariffs, and there is the added difficulty of getting information when correspondence is necessary regarding the package descriptions, etc. The most satisfactory service can be given members if their freight bills are sent at the end of each month, and in order to render the best service in this respect to all members the Traffic Committee has deemed it advisable to establish a rule that the Traffic Department will not undertake a thorough check of freight bills in quantity when more than six months old.

CONVENTION PROGRAM OF THE ELECTRIC VEHICLE ASSOCIATION OF AMERICA

Monday, October 27—Morning Session

President's Address.
Arthur Williams.
Secretary's Report.
Treasurer's Report.
Report of Committees.
Report of Committee on Dates and Charging Stations, John F. Gilchrist, Chairman.
Appointment of Nominating Committee.

Afternoon Session

"What the Sections are Doing."

Chicago Section ..... Homer E. Niesz
New England Section ..... J. A. Hunnewell
New York Electric Vehicle Association .... Harvey Robinson
Electric Motor Car Club of Boston ..... Day Baker

"Traffic Problems and the Automobile," Dr. E. E. Pratt, Manager Industrial Bureau, Merchants' Association of New York.

"The Merchant, the Central Station and the Electric Truck," F. Nelson Carle.

"Co-operation Between the Electric Vehicle Manufacturer and the Central Station," A. L. Callahan.

Tuesday, October 28—Morning Session

Report of Nominating Committee.

"Charging of Storage Batteries in Unattended Garages," Maxwell Berry.

"Electric Vehicle Salesmanship," George H. Kelly and E. J. Bartlett.

"The Electric Vehicle in Department Store Service," C. A. Duerr and David F. Tobias.

"Recent Developments in the Lead Battery for Electric Vehicles," Bruce Ford.

Election of Officers.

Afternoon Session

"Electric Commercial Vehicle Tires," F. E. Whitney.

Report of the Publicity and Advertising Committee, Frank W. Smith.

"How to Make the Business Healthy," a talk by Ralph Temple.

HART-KRAFT ASSETS FOR PRIVATE SALE

Owing to the failure to dispose at public auction of the assets of the Hart-Kraft Motor Company, on August 12th, an attempt was made to dispose of them at public sale by Receiver Donald H. Yost for $30,000. This was also a failure. It has therefore been decided to offer them to all comers, at private sale.

SUDDEN DEATH OF GEORGE W. BENNETT SHOCK TO FRIENDS

George W. Bennett, general manager of the Willys-Overland Company, of Toledo, O., died at his home in that city on September 17, from appendicitis. An operation had been performed the Friday previous from which he rallied but on Monday he suffered a severe relapse and expired soon after the arrival of Dr. Crile, one of the most eminent specialists of that disease in the country. In an endeavor to save Mr. Bennett's life Dr. Crile made a record trip from Cleveland to Toledo, by train, a distance of 107 miles in 83 minutes.

GEORGE W. BENNETT

Mr. Bennett has been one of the big men in the industry since its infancy and like many other leaders in the field he was a graduate of the bicycle times. Although of British birth, his residence in that country was short. About 1887 he became a traveling salesman for the Gormully & Jeffry Manufacturing Company, makers of the Rambler bicycle. He later became manager of the Washington, D. C., branch of this firm and when the business was taken over by the American Bicycle Company, the so-called "bicycle trust," he became a district manager. Previous to the failure of the firm in 1900, the Thomas B. Jeffery Company bought one of the plants where Rambler automobiles were subsequently made. Bennett became sales manager of the Jeffery Company and was a large figure in building up the business of the firm. His next change was to the Knox Automobile Company in which company he invested all his savings and later lost them when the firm failed.

In 1907 Mr. Bennett became manager of the White New York branch which position he held till 1910 when he became sales manager for John N. Willys. Later he was elected vice-president of the Willys-Overland Company, and became general manager. He had entire charge of all Mr. Willys' enterprises, the latter devoting his time principally to the financial end of the business.

Mr. Bennett was also a figure in the N. A. A. M., and it was chiefly through his efforts that the consolidation with the Automobile Board of Trade to form the present Automobile Chamber of Commerce was brought about.

Mr. Bennett was a producer, not only for the present, but for the future, and the policies he pursued in directing the efforts of thousands of Overland dealers in all parts of the world, as well as the executive ability which he made the home office staff of the Overland a model institution that excites the admiration of all well-informed business men, continues in those who, trained by him and under him, have made his methods and precepts their own for the good of the whole.

The thousands of friends and associates of Mr. Bennett throughout the country are inexpressibly shocked at his untimely death. Every man with whom he came in touch during his long and honorable business career, will feel that he has lost a personal friend.

Mr. Willys Says of Him

"In the death of George W. Bennett the automobile industry loses one of its greatest figures, a man who like but few others understood the power of organization—a practical apostle of genuine team work in the world of commerce," said John N. Willys.

It was characteristic of the late Vice-President Bennett, of the Willys-Overland Company, that he always left everything in order, this being one of the warmest tributes to his memory. President Willys informs us that he finds Mr. Bennett's work in such shape that he himself will be able to take up Mr. Bennett's work without difficulty.

SCHACHT PLANT TO BE SOLD

The affairs of the Schacht Motor Car Company, which are now being handled by John F. Dietz, the receiver, are not as successful as was supposed.

In his report he states that the failure was due to lack of system in production, to extravagant free service, and to lack of new models for 1914. It is very probable that the plant will be shut down after the models now under construction have been completed. It is also asserted that it has been impossible to realize assets amounting to $242,854.73, the sum placed upon them in the written report. Mr. Dietz has been ordered by the insolvency court of Hamilton County, O., to dispose of the plant on October 20th.

NEW OFFICERS FOR A. O. SMITH COMPANY

At a meeting of the stockholders and directors of the A. O. Smith Company, Milwaukee, Wis., on September 19, the following officers were elected: L. R. Smith, president and general manager; C. S. Smith, vice-president; E. M. Smith, secretary; James L. Sinyard, treasurer and assistant secretary; Joseph J. Stainer, assistant treasurer; James L. Sinyard, sales manager. The directors are L. R. Smith, C. S. Smith, E. M. Smith, James L. Sinyard and John P. Kelley. L. R. Smith succeeds his father, A. O. Smith, deceased, as president, and will continue the policies which have led to the growth and prestige of the firm.

PIGGINS MOTOR TRUCK COMPANY, Racine, Wis., has gone out of business.

JEFFERY-DEWITT COMPANY, Detroit, Mich., the well-known makers of spark plugs, has incorporated for $500.000 under Maine laws.

MOTOR TRUCK SUPPLY COMPANY, Detroit, Mich., has been organized to manufacture motor truck fenders, such as are required by the ordinances recently passed in Detroit and Chicago.

J. P. GERTSEN, formerly sales manager of the Dart Motor Truck Company, Waterloo, Ia., is now identified with the H. E. Wilcox Motor Car Company, of Minneapolis, Minn., in the capacity of assistant to J. H. Shields, sales manager.

C. W. BABCOCK, formerly sales manager of the truck department of A. O. Smith Company, just returned from a trip to Europe, where he spent three months studying truck conditions in England and on the Continent.

BRICK MANUFACTURERS HOLD CONVENTION

The National Paving Brick Manufacturers' Association held it 10th annual meeting and paving conference at Cleveland, O., on September 17 and 18. Two hundred and fifty engineers and road builders attended.

On the second day of the convention fifty automobiles covered a route of 46 miles over city and country roads. Opportunity was given for comparison of different types of pavements.

The most impressive example of a monolithic brick surface, however, was exhibited on a rural highway southwest of the city, where the floods of last spring had imposed a peculiar test. A retaining wall was destroyed by the force of the water and half the width of the roadway removed. Even the concrete base fell away, but the grouted brick surface remains overhanging the washout, a perfect shelf 80 ft. long and 7 ft. wide, strong enough to support an automobile.

The day's trip included luncheon at the Randall race course and a brief review of many points of interest in and about the Forest City. Wherever new paving construction was in progress, stops for closer examination and informal discussion of the work under the direction of Secretary Blair of the association were made.

A Cement-Grouted Brick Shelf

The concrete base was washed away, leaving this brick shelf, 80 x 7 ft. This was viewed, holding an automobile, as shown, by the members of the convention

OIL MEN HOLD BANQUET

The National Petroleum Association on Friday, September 26th, at the Hotel Shelburne, Atlantic City, was tendered a banquet by the following companies: Canfield Oil Company, Cleveland, O.; Great Western Oil Company, Erie, Kans.; High Grade Oil Refining Company, Bruin, Pa.; Highland Petroleum Company, Pittsburgh, Pa.; Paragon Refining Company, Toledo, O.; Pittsburgh Oil Refining Company, Pittsburgh, Pa.; Waverly Oil Works, Pittsburgh, Pa.

The dinner was a large one, and there were many prominent speakers present, there being toasts by the following well-known men: Hon. Charles A. Prouty, Commissioner of Interstate Commerce Commission; Senator Robert L. Owen, of Oklahoma; Hon. Blackburn Esterline, Special Attorney, Department of Justice; Hon. Willis J. Hulings, of Pennsylvania, United States House of Representatives.

The following companies were represented:

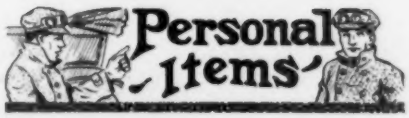
American Oil Works, Ltd., Titusville, Pa.; The Bessemer Refining Company, Titusville, Pa.; Canfield Oil Company, Cleveland, O.; Central Refining Company, Lawrenceville, Ill.; The Chanute Refining Company, Chanute, Kan.; Chelsea Refining Company, Chelsea, Okla.; The F. G. Clarke Company, Cleveland, O.; The Conawango Refining Company, Warren, Pa.; The Continental Refining Company, Oil City, Pa.; Cornplanter Refining Company, Warren, Pa.; Crew-Levick Company, Philadelphia, Pa.; Crystal Oil Works, Oil City, Pa.; Cudahy Refining Company, Chicago, Ill.; Emery Manufacturing Company, Bradford, Pa.; Emlenton Refining Company, Emlenton, Pa.; Empire Oil Works, Oil City, Pa.; Germania Refining Company, Oil City, Pa.; Glade Oil Works, Warren, Pa.; The Great Western Oil Company, Cleveland, O.; The Great Western Oil Refining Company, Erie, Kan.; The High Grade Oil Refining Company, Bruin, Pa.; Independent Refining Company, Ltd., Oil City, Pa.; The Island Petroleum Company, Pittsburgh, Pa.; The Kansas Co-Operative Refining Company, Chanute, Kan.; The Kansas Oil Refining Company, Coffeyville, Kan.; Kendall Refining Company, Bradford, Pa.; Levi Smith, Ltd., North Clarendon, Pa.; Mutual Refining Company, Ltd., Warren, Pa.; National Refining Company, Cleveland, O.; The Paragon Refining Company, Toledo, O.; The Penn Refining Company, Oil City, Pa.; Pennsylvania Paraffine Works, Titusville, Pa.; Pittsburgh Oil Refining Company, Pittsburgh, Pa.; The Red "C" Oil Manufacturing Company, Baltimore, Md.; Seneca Oil Works, Warren, Pa.; Superior Oil Works, Warren, Pa.; Tiona Refining Company, North Clarendon, Pa.; Union Petroleum Company, Philadelphia, Pa.; United Refining Company, Warren, Pa.; Waverly Oil Works Company, Pittsburgh, Pa.; Warren Refining Company, Warren, Pa.; Wellsville Refining Company, Wellsville, N. Y.

Annual Banquet National Petroleum Association

The dinner was held at the Hotel Shelburne, Atlantic City, September 26th, a large number of representative men bring present

Semaphore Regulates Traffic

A new stunt is being tried out by the Superintendent of Police, of Philadelphia. Instead of waving the hand or blowing a whistle the officer operates a semaphore. So far the experiment has proven successful. The apparatus illustrated, however, has not been permanently adopted, as some improvements are being contemplated.



T. R. Johnson, advertising manager of the Jackson-Church-Wilcox Company, of Saginaw, Mich., has also assumed the duties of sales manager.

G. H. Duck has recently accepted the position of assistant to the advertising manager of the Locomobile Company of America, Bridgeport, Conn.

J. R. Bradford, sales manager of the M. B. M. Motor Company, Boston, Mass., has resigned to take a position as Pacific coast representative of the Wagenhals Company, of Detroit.

A. Hauschild, formerly manager of the Polack Tyre & Rubber Company, has become manager of the new solid tire department of the McGraw Tire & Rubber Company, East Palestine, O.

F. L. Sample, who was sales and advertising manager of the Havoline Oil Company, is now sales manager for the Wagner Oil Company, with offices at 551 West Forty-second Street, New York City.

H. W. Gray, formerly manager of the Neustadt Auto & Supply Company, St. Louis, Mo., and later in the supply business for himself, has joined the sales force of the General Motors Truck Company.

James A. Holihan, formerly assistant general manager of the Briscoe Manufacturing Company, Detroit, Mich., and who has been with the company for the past twelve years, has severed his connection with that organization.

R. W. Hutchinson, Jr., well-known in the commercial car industry, and recently advertising manager of the International Motor Company, has been appointed transportation engineer of the Packard Motor Car Company.

F. R. Pendleton, formerly connected with the General Motors Company, has joined the sales force of the Commerce Motor Car Company, of Detroit, manufacturer of the Commerce one-ton truck. He will act as Eastern sales representative.

S. M. Udale, formerly assistant research engineer with the Studebaker Corporation, is now in charge of the laboratory and motor testing plant of Joseph Tracy, whose New York office is in the United States Rubber Building, 1790 Broadway.

H. E. Wilcox, president of the H. E. Wilcox Motor Car Company, of Minneapolis, convinced that there is a great field for the motor truck on the Pacific coast, is at present a visitor in San Francisco. He is planning to remain there for six months, if necessary, or until he secures the right representation for his line. His idea is to make San Francisco his central distributing point, with live agencies in Los Angeles, San Diego and Portland.

N. J. Sherrill, of Charlotte, N. C., is now connected with the Chase Motor Truck Company, as district manager, with North and South Carolina as his territory. C. J. Batcharie is connected in the same capacity, taking care of Washington and Oregon.

George Von Rottweiller, who for the past two years has been chief engineer and factory manager of the Wm. Galloway Company, of Waterloo, Ind., has become vice-president, general manager and chief engineer of the Crown Commercial Car Company, North Milwaukee, Wis.

W. H. Shutt, formerly manager of the H. J. Koehler Sporting Goods Company's Boston branch, has been made director of sales and advertising of the Koehler Company, and will have headquarters at the New York office. He is directing his efforts at present to the Koehler one-ton truck.

Fred A. Cornell, a prominent figure in the automobile industry, has joined the selling force of the Splitdorf Electrical Company, Newark, N. J. He was for a considerable time identified with the selling staff of the Timken Roller Bearing Company, but for nearly three years immediately preceding his present appointment was service manager of the Willys-Overland Company.

Geo. H. Kelly has been advanced from the position of manager of the truck department of the Baker Motor Vehicle Company, Cleveland, O., to the office of secretary and sales director. R. C. Norton, formerly secretary and treasurer, will continue as treasurer. E. J. Bartlett has become sales manager of the truck department and O. B. Henderson continues as sales manager of the pleasure car department.

Moore, F. L. Truck Company, Los Angeles, Cal., will remove its plant to Torrance.

Old Reliable Motor Truck Company will soon be in a new factory on Michigan Avenue, Chicago, Ill., where the output will be many times increased over the old plant on the north side.

Standard Steel Car Works, New Castle, Pa., are operating the machine shop, forge and motor truck departments at night. An order has been received for the manufacture of several hundred six-wheel motor trucks which will keep the night and day shifts busy for some time.

General Motors Company, which recently removed the equipment of its Reliance Motor Truck factory from Owosso to Pontiac, will establish a gray iron foundry in the factory vacated at Owosso. It is understood that the new industry will be started next spring.

Globe Ball Bearing Company, Norwich, Conn., has been bought by the Willys-Overland Company, of Toledo, O. The entire machinery of the concern is being moved to Elmira, N. Y., where it will be re-established in connection with the Morrow Manufacturing Company, a subsidiary of the Overland Company.

Victory Motor Car Company, S. 1st Street, San Jose, Cal., has been bought by a syndicate of men headed by Wm. J. Benson, who will turn the plant into a traction engine factory. It is said that the plant will be enlarged later and will contain a big assembling plant for the Maxwell car. About $15,000 was involved in the deal.

Crescent Motor Truck Company, Middletown, O. Dr. D. R. Bundy has been appointed receiver on application of M. W. Rennyick, W. H. Johnson and Dr. Bundy, who allege that the company is heavily in debt and is losing money. The company is capitalized at $40,000.

Dominant Motor Company, agent for Packard cars and trucks in Albany, is in hands of receiver Geo. M. Davis, who for the last four months has been manager of the company. Thos. Hun, Walter F. Schmitt and Worthing Palmer have been appointed as appraisers. The receiver, who filed a bond for $12,000, is authorized to continue the business.

Morse-Readio Company, Springfield, Mass., assigned to Frederick J. Hillman, of the New England Auditing Company. The liabilities are given as $34,450, and the assets as $47,295. The recent discontinuance of the Alco, in the advertisements of which the local agents were considerably involved, is given as the cause of the embarrassment.

Smith, Frederick A. Company, 230 W. 58th Street, New York City, dealer in second-hand commercial cars and supplies, filed a petition in bankruptcy with liabilities of $20,236, and assets of $778 in outstanding accounts. Among the creditors are Antonio D. Martina, $1500; Farmers' Loan & Trust Company, $1657; Motor Finance Company, $1571; Yglesia Lobo & Company, $1200. The company was incorporated in January, 1911, with a capitalization of $25,000. Frederick A. Smith is treasurer.

Commercial Cars, Ltd., Luton, England, manufacturer of Commer trucks, filed a complaint in the United States District Court for the Southern District of New York against Clarence F. Wyckoff and Ernest S. Partridge, demanding $49,704.54. This sum is claimed on bills of exchange made by the Commer Company between October 31, 1911, and February 9, 1912, and accepted and endorsed, it is claimed, by Wyckoff and Partridge, who were members of Wyckoff, Church & Partridge, Commer distributors in America before they went into bankruptcy. The claim is made up of 28 separate causes and contains 169 clauses. The claims range from small amounts to sums in excess of $2,000.

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The day's trip included luncheon at the Randall race course and a brief review of many points of interest in and about the Forest City. Wherever new paving construction was in progress, stops for closer examination and informal discussion of the work under the direction of Secretary Blair of the association were made.

A Cement-Grouted Brick Shelf

The concrete base was washed away, leaving this brick shelf, 80 x 7 ft. This was viewed, holding an automobile, as shown, by the members of the convention

OIL MEN HOLD BANQUET

The National Petroleum Association on Friday, September 26th, at the Hotel Shelburne, Atlantic City, was tendered a banquet by the following companies: Canfield Oil Company, Cleveland, O.; Great Western Oil Company, Erie, Kans.; High Grade Oil Refining Company, Bruin, Pa.; Highland Petroleum Company, Pittsburgh, Pa.; Paragon Refining Company, Toledo, O.; Pittsburgh Oil Refining Company, Pittsburgh, Pa.; Waverly Oil Works, Pittsburgh, Pa.

The dinner was a large one, and there were many prominent speakers present, there being toasts by the following well-known men: Hon. Charles A. Prouty, Commissioner of Interstate Commerce Commission; Senator Robert L. Owen, of Oklahoma; Hon. Blackburn Esterline, Special Attorney, Department of Justice; Hon. Willis J. Hulings, of Pennsylvania, United States House of Representatives.

The following companies were represented:

American Oil Works, Ltd., Titusville, Pa.; The Bessemer Refining Company, Titusville, Pa.; Canfield Oil Company, Cleveland, O.; Central Refining Company, Lawrenceville, Ill.; The Chanute Refining Company, Chanute, Kan.; Chelsea Refining Company, Chelsea, Okla.; The F. G. Clarke Company, Cleveland, O.; The Conawango Refining Company, Warren, Pa.; The Continental Refining Company, Oil City, Pa.; Cornplanter Refining Company, Warren, Pa.; Crew-Levick Company, Philadelphia, Pa.; Crystal Oil Works, Oil City, Pa.; Cudahy Refining Company, Chicago, Ill.; Emery Manufacturing Company, Bradford, Pa.; Emlenton Refining Company, Emlenton, Pa.; Empire Oil Works, Oil City, Pa.; Germania Refining Company, Oil City, Pa.; Glade Oil Works, Warren, Pa.; The Great Western Oil Company, Cleveland, O.; The Great Western Oil Refining Company, Erie, Kan.; The High Grade Oil Refining Company, Bruin, Pa.; Independent Refining Company, Ltd., Oil City, Pa.; The Island Petroleum Company, Pittsburgh, Pa.; The Kansas Co-Operative Refining Company, Chanute, Kan.; The Kansas Oil Refining Company, Coffeyville, Kan.; Kendall Refining Company, Bradford, Pa.; Levi Smith, Ltd., North Clarendon, Pa.; Mutual Refining Company, Ltd., Warren, Pa.; National Refining Company, Cleveland, O.; The Paragon Refining Company, Toledo, O.; The Penn Refining Company, Oil City, Pa.; Pennsylvania Paraffine Works, Titusville, Pa.; Pittsburgh Oil Refining Company, Pittsburgh, Pa.; The Red "C" Oil Manufacturing Company, Baltimore, Md.; Seneca Oil Works, Warren, Pa.; Superior Oil Works, Warren, Pa.; Tiona Refining Company, North Clarendon, Pa.; Union Petroleum Company, Philadelphia, Pa.; United Refining Company, Warren, Pa.; Waverly Oil Works Company, Pittsburgh, Pa.; Warren Refining Company, Warren, Pa.; Wellsville Refining Company, Wellsville, N. Y.

Annual Banquet National Petroleum Association

The dinner was held at the Hotel Shelburne, Atlantic City, September 26th, a large number of representative men bring present

Semaphore Regulates Traffic

A new stunt is being tried out by the Superintendent of Police, of Philadelphia. Instead of waving the hand or blowing a whistle the officer operates a semaphore. So far the experiment has proven successful. The apparatus illustrated, however, has not been permanently adopted, as some improvements are being contemplated.

T. R. Johnson, advertising manager of the Jackson-Church-Wilcox Company, of Saginaw, Mich., has also assumed the duties of sales manager.

G. H. Duck has recently accepted the position of assistant to the advertising manager of the Locomobile Company of America, Bridgeport, Conn.

J. R. Bradford, sales manager of the M. B. M. Motor Company, Boston, Mass., has resigned to take a position as Pacific coast representative of the Wagenhals Company, of Detroit.

A. Hauschild, formerly manager of the Polack Tyre & Rubber Company, has become manager of the new solid tire department of the McGraw Tire & Rubber Company, East Palestine, O.

F. L. Sample, who was sales and advertising manager of the Havoline Oil Company, is now sales manager for the Wagner Oil Company, with offices at 551 West Forty-second Street, New York City.

H. W. Gray, formerly manager of the Neustadt Auto & Supply Company, St. Louis, Mo., and later in the supply business for himself, has joined the sales force of the General Motors Truck Company.

James A. Holihan, formerly assistant general manager of the Briscoe Manufacturing Company, Detroit, Mich., and who has been with the company for the past twelve years, has severed his connection with that organization.

R. W. Hutchinson, Jr., well-known in the commercial car industry, and recently advertising manager of the International Motor Company, has been appointed transportation engineer of the Packard Motor Car Company.

F. R. Pendleton, formerly connected with the General Motors Company, has joined the sales force of the Commerce Motor Car Company, of Detroit, manufacturer of the Commerce one-ton truck. He will act as Eastern sales representative.

S. M. Udale, formerly assistant research engineer with the Studebaker Corporation, is now in charge of the laboratory and motor testing plant of Joseph Tracy, whose New York office is in the United States Rubber Building, 1790 Broadway.

H. E. Wilcox, president of the H. E. Wilcox Motor Car Company, of Minneapolis, convinced that there is a great field for the motor truck on the Pacific coast, is at present a visitor in San Francisco. He is planning to remain there for six months, if necessary, or until he secures the right representation for his line. His idea is to make San Francisco his central distributing point, with live agencies in Los Angeles, San Diego and Portland.

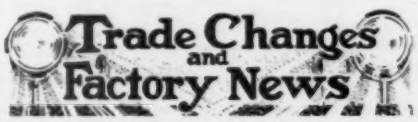
N. J. Sherrill, of Charlotte, N. C., is now connected with the Chase Motor Truck Company, as district manager, with North and South Carolina as his territory. C. J. Batcharie is connected in the same capacity, taking care of Washington and Oregon.

George Von Rottweiller, who for the past two years has been chief engineer and factory manager of the Wm. Galloway Company, of Waterloo, Ind., has become vice-president, general manager and chief engineer of the Crown Commercial Car Company, North Milwaukee, Wis.

W. H. Shutt, formerly manager of the H. J. Koehler Sporting Goods Company's Boston branch, has been made director of sales and advertising of the Koehler Company, and will have headquarters at the New York office. He is directing his efforts at present to the Koehler one-ton truck.

Fred A. Cornell, a prominent figure in the automobile industry, has joined the selling force of the Splitdorf Electrical Company, Newark, N. J. He was for a considerable time identified with the selling staff of the Timken Roller Bearing Company, but for nearly three years immediately preceding his present appointment was service manager of the Willys-Overland Company.

Geo. H. Kelly has been advanced from the position of manager of the truck department of the Baker Motor Vehicle Company, Cleveland, O., to the office of secretary and sales director. R. C. Norton, formerly secretary and treasurer, will continue as treasurer. E. J. Bartlett has become sales manager of the truck department and O. B. Henderson continues as sales manager of the pleasure car department.



Moore, F. L. Truck Company, Los Angeles, Cal., will remove its plant to Torrance.

Old Reliable Motor Truck Company will soon be in a new factory on Michigan Avenue, Chicago, Ill., where the output will be many times increased over the old plant on the north side.

Standard Steel Car Works, New Castle, Pa., are operating the machine shop, forge and motor truck departments at night. An order has been received for the manufacture of several hundred six-wheel motor trucks which will keep the night and day shifts busy for some time.

General Motors Company, which recently removed the equipment of its Reliance Motor Truck factory from Owosso to Pontiac, will establish a gray iron foundry in the factory vacated at Owosso. It is understood that the new industry will be started next spring.

Globe Ball Bearing Company, Norwich, Conn., has been bought by the Willys-Overland Company, of Toledo, O. The entire machinery of the concern is being moved to Elmira, N. Y., where it will be re-established in connection with the Morrow Manufacturing Company, a subsidiary of the Overland Company.

Victory Motor Car Company, S. 1st Street, San Jose, Cal., has been bought by a syndicate of men headed by Wm. J. Benson, who will turn the plant into a traction engine factory. It is said that the plant will be enlarged later and will contain a big assembling plant for the Maxwell car. About $15,000 was involved in the deal.

Crescent Motor Truck Company, Middletown, O. Dr. D. R. Bundy has been appointed receiver on application of M. W. Rennyick, W. H. Johnson and Dr. Bundy, who allege that the company is heavily in debt and is losing money. The company is capitalized at $40,000.

Dominant Motor Company, agent for Packard cars and trucks in Albany, is in hands of receiver Geo. M. Davis, who for the last four months has been manager of the company. Thos. Hun, Walter F. Schmitt and Worthing Palmer have been appointed as appraisers. The receiver, who filed a bond for $12,000, is authorized to continue the business.

Morse-Readio Company, Springfield, Mass., assigned to Frederick J. Hillman, of the New England Auditing Company. The liabilities are given as $34,450, and the assets as $47,295. The recent discontinuance of the Alco, in the advertisements of which the local agents were considerably involved, is given as the cause of the embarrassment.

Smith, Frederick A. Company, 230 W. 58th Street, New York City, dealer in second-hand commercial cars and supplies, filed a petition in bankruptcy with liabilities of $20,236, and assets of $778 in outstanding accounts. Among the creditors are Antonio D. Martina, $1500; Farmers' Loan & Trust Company, $1657; Motor Finance Company, $1571; Yglesia Lobo & Company, $1200. The company was incorporated in January, 1911, with a capitalization of $25,000. Frederick A. Smith is treasurer.

Commercial Cars, Ltd., Luton, England, manufacturer of Commer trucks, filed a complaint in the United States District Court for the Southern District of New York against Clarence F. Wyckoff and Ernest S. Partridge, demanding $49,704.54. This sum is claimed on bills of exchange made by the Commer Company between October 31, 1911, and February 9, 1912, and accepted and endorsed, it is claimed, by Wyckoff and Partridge, who were members of Wyckoff, Church & Partridge, Commer distributors in America before they went into bankruptcy. The claim is made up of 28 separate causes and contains 169 clauses. The claims range from small amounts to sums in excess of $2,000.

Conventions of Interest to the Trade

National

October 15-25—New York City. Electrical Exposition and Motor Show, New Grand Central Palace.
October 17-27—Paris, France.
October 18-November 1—Pittsburg, Pa. Show for Used Cars of all kinds. Automobile Dealers' Association of Pittsburg. W. H. La Fountain, Manager Motor Square Garden.
October 18-November 2—Dallas, Tex., Dallas Dealers' Auto Association. D. F. Safford, mgr.
November 8-15—Atlanta, Ga. Atlanta Auto and Accessory Association. Auditorium Armory.
November 24—Savannah, Ga. Savannah Auto Dealers' Association.
December—Newark, N. J. Armory Building. New Jersey Auto Trade Association.
January 10-16—Milwaukee, Wis.
January 24-31—Rochester, N. Y. Exposition Park. Rochester Automobile Dealers' Association. C. A. Simmons, manager.
January 26-31—Scranton, Pa. Armory. H. B. Andrews.
January 31-February 7—Minneapolis, Minn. Minneapolis Auto Trade Association. F. E. Murphy, Secretary. National Guard Armory.
February—Fort Dodge, Ia. Armory. Auto Dealers' Association.
February—Elmira, N. Y. Automobile Show. Frank D. Pratt.
February 7—Omaha, Neb. C. G. Powell, Secretary, 2119 Farnam St.
February 9-14—Buffalo, N. Y. Buffalo Auto Dealers' Association. J. J. Gilson, 401 Franklin St., Secretary.
February 18-21—Bloomington, Ill. McLean County Auto Club.
February 21-28—Newark, N. J. New Jersey Automobile Exhibition Company.
February 24-March 1—Cincinnati, Ohio. Cincinnati Automobile Dealers' Association.
March—Grand Rapids, Mich. *Grand Rapids Herald.* Klingman Furniture Bldg.
March—Wichita, Kans. Wichita Business Association.
March 17-21—Boston, Mass. Boston Commercial Motor Vehicle Association. C. I. Campbell, Secretary.
April 9-15—Manchester, N. H. Mechanics' Hall. D. F. Sullivan.

State Conventions and Fairs

October 20-24—at Philadelphia, Pa. The Annual Convention of American Mining Congress. David W. Brunton, of Denver, Col., is president of the Association.
October 21-25—New Orleans, La. International Association of Electrotypers; R. J. Wilhelm, Secretary, 64 South Division St., New York City.
October 21-25—at New Orleans, La. United Typothetae of America; F. W. Heath, Secretary, 1650 Transportation Bldg., Chicago, Ill.
October 22—at Tulsa, Okla. International Dry Farming Congress.
October 23—at Savannah, Ga. Convention of Third Division of Southern Wholesale Dry Goods Association. E. E. Epstein, Savannah, Secretary.
October 24—at Chicago, Ill., American Iron & Steel Institute; James T. McCleary, Secretary, 30 Church St., New York City.
October 27-29—at Mobile, Ala. Fifth Annual Convention of Southern Commercial Congress.
October 29-31—at Chicago, Ill. National Creamery Buttermakers' Association; S. B. Shilling, 136 W. Lake St., Chicago, Secretary.
October 29-31—at Hotel Marlboro-Blenheim, Atlantic City, N. J. National Hardware Association of U. S.; Secretary, J. T. Fernley, 505 Arch St., Philadelphia.
October 31-November 4—at New York (Museum of Natural History), National Association of Gardeners. M. C. Ebel, Madison, N. J.
November—at New York City. Convention of National Association of Leather Belting Manufacturers.
November—at Cincinnati, O. The Convention of the National Coffee Roasters' Association; G. W. Toms, Secretary, Dayton, O.
November 4-7—Grunewald Hotel, New Orleans, La. Laundrymen's National Association of America; Secretary, W. E. Fitch, 425 1st St., LaSalle, Ill.
November 11—at No. 11 Broadway, New York. American Society of Engineering Contractors; Secretary, J. R. Wemlinger.
November 18-29—at Louisville, Ky. Maintenance of Way, Master Painters' Association; Secretary, Wm. G. Wilson, 149 Beacon St., Middletown, N. Y.

The list of conventions given herewith is published each month so that commercial car manufacturers can communicate with the proper authorities with the idea of arranging to give lectures, illustrated talks, statistics, etc., to show the advantage of motor trucks in these various lines; also possibly to show and demonstrate their cars.

November 18-20—at Marlin, Tex. Convention of Southwestern Ice Manufacturers' Association. J. C. Mitchell, Temple, Tex., Secretary.
November 20-21—at Buffalo, N. Y. Convention of American Specialty Manufacturers' Association. Iriquois Hotel. Stanley E. Hawkins, Buffalo, Secretary.
December 1-6—at Philadelphia, Pa. National Commercial Gas Association. Secretary, Louis Stotz, 29 W. 39th St., New York City.
December 3—at Chicago, Ill. National Association of Furniture Manufacturers. Secretary, J. S. Linton, Ashton Building, Grand Rapids, Mich.
January—at New York City. Convention of National Association of Retail Shoe Dealers in conjunction with National Boot and Shoe Manufacturers' Association. A. S. Kreider, Annville, Pa., President.
January 14—at Hotel Astor, New York City. National Boot and Shoe Manufacturers' Association. Sol Weil, Secretary, Rochester, N. Y.
February—at Parkersburg, W. Va. Convention of West Virginia Retail Hardware Dealers' Association. Board of Commerce.
February 10-24—at Dallas, Tex. National Corn Exposition.
February 16-20—at Chicago, Ill. Tenth Annual Convention of National Association of Cement Users. Edward E. Krauss, Harrison Bldg., Philadelphia, Pa., Secretary.
April 22-25—at Savannah, Ga. Convention of National Drainage Congress. Edmund P. Perkins, Chicago, Ill., President.
October 18-23—at Gilbertown, Ala. The Choctaw County Farm Demonstration and Fair Association will hold Annual Fair.
October 21-23—at Meridian, Miss. State Convention of Farmers' Union of Miss. R. A. N. Wilson, Chairman.
October 21-23—at Chester, S. C. The Chester County Fair Association will hold Fair. G. J. Patterson, Secretary.
October 21-24—at Wichita, Kan. Business Men's Association preparing for Trans-Mississippi Congress, to be held in Wichita.
October 21-31—at Macon, Ga. Georgia State Fair; M. V. Calvin, Secretary.
October 22-24—at Harrisonburg, Va. Rockingham County Fair Association will hold Fair at Lake Park.
October 22-November 1—at Tulsa, Okla. Eighth Annual Session of Congress & International Soil Produce Exposition.
October 27-31—at Columbia, S. C. South Carolina Agricultural and Mechanical Society will hold Fair at University of S. C.
October 27-November 1—at Tuscaloosa, Ala. West Alabama Fair Association will hold Fair.
October 28-31—at New Bern, N. C. Eastern Carolina Fair. J. Leon Williams, Secretary.
October 28-November 1—at El Campo, Tex. El Campo Agricultural Fair Association will hold Annual Fair. H. D. Brow, Secretary.
November—at Shreveport, La. State Fair.
November—at Columbus, Ga. Board of Trade will hold Fair.
November—at Orangeburg, N. C. Orangeburg County Fair. J. M. Hughes, Secretary.
November 3-8—at Dublin, Ga. Twelfth District Fair Association will hold Fair. P. S. Tweitty, Manager.
November 4-7—at Walterboro, S. C. Colleton County Fair Association will hold Annual Fair. R. M. Jeffries, Secretary and Treasurer.
November 4-8—at New Orleans, La. Laundrymen's Convention. Jacob Loeb, Crescent Laundry, New Orleans, preparing for event.
November 7-14—at Augusta, Ga. Poultry Show and Fair under the auspices of the Augusta Poultry Association and Georgia-Carolina Association.
November 11-12—at Fort Worth, Tex. Annual Convention of the Texas Commercial Secretaries' and Business Men's Association.
November 15-22—at Beaumont, Tex. Southeast Texas Fair.
November 17-22—at Columbus, Ga. Columbus Poultry Association will hold exhibition. John S. Jenkins, Secretary.
November 17-26—at Baltimore, Md. Maryland week celebration of State Horticultural Society. Lewis F. Kefauver, Middletown, chairman.
November 18-20—at Louisville, Ky. Maintenance of Way, Master Painters' Association. Wm. C. Wilson, Secretary, 149 Beacon St., Middletown, N. Y.
November 26-28—at Darlington, S. C. The Eastern California Poultry Association will hold Poultry Show.
December—at La Crosse, Wis. La Crosse Wisconsin and Pet Stock Association will hold Annual Show.
December 2-4—at Antigo, Wis. Convention of State Dairymen's Association. Commercial Club preparing.
December 9-12—at Philadelphia, Pa. Tenth Annual Convention of American Road Builders' Association, to be held at First Regiment Armory Building. E. L. Powers, 150 Nassau St., New York City, Secretary.
December 9-13—at Harrisburg, Pa. Central Pennsylvania Poultry Association will hold exhibition; C. S. Smith, of West Fairview, is Show Superintendent.
December 10-12—at Milwaukee, Wis. Wisconsin Retail Implement and Vehicle Dealers' Association; G. F. Borchardt, South Milwaukee, Wis., President.
December 11-12—at Georgetown, Del. Delaware Corn Growers' Association will hold show.
December 11-20—at New York City. First International Exposition of Safety and Sanitation, under auspices of the American Museum of Safety, 29 W. 39th St., New York City.
January 15—at Minneapolis, Minn. Winter Convention of Minnesota Retail Monument Dealers' Association.
January 20-22—at San Antonio, Tex. Annual Convention of the Texas Hardware and Implement Association.
February 9-14—at Baltimore. Retail Hardware Association of Maryland, Pennsylvania, Delaware and New Jersey will hold convention; W. P. Lewis, Huntingdon, Pa., is Secretary.
February 10-13—at Philadelphia, Pa. The Penna. Retail Hardware Dealers' Association will hold exhibition at 3rd Regiment Armory.
March—at San Francisco, Cal. Convention of California State Retail Dealers' Association.
April—at Albany, N. Y. Convention of New York State Embalmers' Association. William S. Drinkwine, New York City, President.

B. F. Everett and his associates are completing the model of a one-ton truck. Announcement of a new company to manufacture the truck will be made soon.

Pratt, Carter, Sigsbee Company, Detroit, Mich., which started over a year ago to manufacture a single cylinder one-ton truck, is now planning a four-cylinder model.

Nelson-LeMoon Motor Truck Company, Chicago, Ill., is coming out next season with two new models, a three-fourths-ton worm drive machine and a five-ton chain drive car.

Signal Motor Truck Company, Detroit, Mich., instead of making a 1000-lb. capacity truck, will make a truck of 1500-lb. capacity. The company has leased a factory building at 672-74 Commonwealth Avenue.

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IMPORTANCE OF THE DRIVER NOT RECOGNIZED BY THE MANUFACTURERS

MUCH has been written on the role played by the driver in the commercial car industry. Much has been said of his importance. New owners do not realize that seventy-five per cent. depends upon the driver. The class of goods handled; the territory covered; the method of routing, and the inherent goodness or badness of the truck itself, count for twenty-five per cent. or less. All of these things have been written again and again, and published broadcast in automobile trade papers and the public press. Yet in spite of all of this publicity, the manufacturer, the one man who should realize the importance of the driver, apparently does not.

It has been said, and justly, that there is something wrong with the truck industry. This does not mean that we have any fear whatever that the industry is going to pieces, that it is on an unstable basis, or that it will not eventually grow to many times its present status. But we do recognize some of the glaring mistakes which are being made every day by those in the industry. One of the most unpardonable is the lack of appreciation on the part of the manufacturer of the importance of the driver. A good driver is just as essential to success as any vital element of the machine itself. What is the use of a good motor, if the driver runs it dry? How can any piece of mechanism stand up with a spark continually advanced to the hammering point? How can a sliding gear withstand the shock of continuously being thrown into mesh with the clutch only partly disengaged, and the gears spinning at high speed? What maker will stand up and say he can manufacture a truck which will resist continual pounding over cobblestone pavements, street car and railroad tracks, and even curbstones?

Only the other day the writer in a touring car had difficulty in overtaking a large heavily loaded truck, going up hill. This truck was being driven at fully twenty-five miles an hour, up a good, stiff grade with a full load on. Of course, the governor was disengaged and the heavily loaded vehicle had coasted down the preceding hill at frightful speed, and then the engine was raced to the limit. How long will any mechanism stand this kind of abuse? All these are things, "up to the driver."

It is an utter fallacy on the part of the maker to build a fine piece of mechanism, and then forget it. If he is to be successful he can't forget it, he must to a certain extent govern its use at least until such time as a race of competent drivers has grown up. It is of just as vital importance to him that this fine piece of mechanism be operated with skill and judgment as it is to select fatigue-resisting metals from which to construct the component parts.

You ask, how can the manufacturer in any way control who drives his product? We answer, this can be done through the agent and the branch houses. How many agencies and branch houses are actually supplying competent operators to those who purchase their trucks? How many are giving them the instruction and supervision which the driver must have to handle their vehicles intelligently? The number of companies who do business in this way can be counted on one hand.

Now, if it is true that the success or failure of the truck in service is dependent almost entirely upon who handles it, the mistake which the manufacturers are making is all too evident.

Again we say branch houses, agents and dealers should combine in every city in this United States to educate the driver; to teach men to operate commercial cars successfully. This should be done co-operatively to cut down the expense. What is now being done by a few progressive makers should be the common rule, and should be done by all makers.

It is said there will be a house-cleaning in the truck industry. Of course there will be, and it will be a good thing for the industry. There always is in every comparatively new line of manufacturing endeavor, and those that are left will, it is hoped, appreciate the importance of the driver.

Now, however, is the opportunity to ameliorate the effect on the industry of a so-called house-cleaning. Let every agent, every dealer, and every branch house see to it, with just the same forethought and interest in the matter as they would give that the engine was properly timed, let them see to it that every individual truck is placed only in the hands of a thoroughly competent operator; a man if necessary, tested by them and passed upon. If the user will not do this, let the guarantee be withdrawn. The importance of the driver in this situation, we reiterate, has not been appreciated, and we again force this point upon the makers and shall continue to do so until something definite and remedial has been done.

The part which the driver plays is not only ignored to a great extent by the manufacturers, but even users themselves do not seem to realize that the driver is the most important factor which they can control. In other words, after the truck is purchased, the most important thing is to get a man who is thoroughly competent and reliable. Other items in connection with the use of the truck are mere incidentals and fade into insignificance as compared to the importance of the driver. How many times have these incompetent men smashed into wagons, poles and bridges, damaging to a greater or less extent the valuable equipment, or have allowed parts to run out of adjustment without lubrication, or lose, and the blame has been placed on the mechanism.

DEPLORABLE LACK OF INVESTIGATION ON THE PART OF MERCHANTS

IN a recent interview with a large business firm in one of the largest cities in the country, the writer was astounded to find that although this company was receiving from five to six carloads of material every week, and was using two commercial cars for delivery, that they had not planned to care for this mass of hauling by power. The company in question admitted that horses were slow, and that they had to have a number of wagons shuttling back and forth to care for this freight.

There are reasons in many large cities for not using trucks in freight yards. It does not pay to tie up a high-priced commercial car in the slow traffic of a freight yard. Very often although the platform where the goods are to be received by the truck is open, it is impossible for the truck to get out of line of the waiting horse vehicles to get to the platform.

Again the truck must take its turn, and although it has the ability to go ahead of the horse vehicles, it must stand idly by, going at the slow horse pace of the rest of the line after it once enters the yard.

But unloading the cars in question is a very different proposition. These are accessible to trucks.

The excuse given for not employing trucks was, that at the present time there is only room for two vehicles at the outgoing, and two at the incoming platform at their place of business. Short sighted policy! This is really a good reason why a couple of large five-ton trucks should be used, as these would do away with at least four to six wagons, and to this extent relieve the congested conditions at their inadequate loading and unloading platforms. Two such trucks could be kept continually at work by this company, yet conditions have not been analyzed sufficiently by them to make this fact apparent.

This is not an isolated case. There are others. In fact, it is quite typical of the state of affairs existing in many a business organization that should know better, concerns with sufficient capital to do their business on a business basis.

It is just such lack of study of the detailed circumstances connected with each different class, which has prevented the sale of trucks to more than one concern which will eventually become a large purchaser. On every side, trucks are hampered by horse conditions which are but very gradually being eliminated.

The congestion of horse traffic is slowly but surely being relieved by the introduction of motor vehicles, each of which supplants from two to two and a half cumbersome two horse wagons. Their ability to get in and out quickly, their speed between points, and their shorter length when at the loading platforms, all militate toward rapid transportation.

It is well for each merchant to personally investigate this matter of modern transportation by commercial cars, and make sure that he is not one of those who is idling along with an antiquated equipment, while his competitor is gaining on him in the race by more up-to-date methods.

Steel and Rubber Markets

Steel Lower Than Last Month

Steel prices continue downward owing to lack of orders. Business in steel so far for this month is considerably under the amount for the same portion of last month. It is expected, however, that large orders will be placed before the expiration of the month. Quotations on October 9th were:

STEEL PRODUCTS PRICES

Bessemer steel, per ton, mill	23 00 a24 00
Open hearth, per ton, mill	23 00 a24 00
Sheet bars, per ton	24 00 a25 00
Steel bars, soft base, half ex., tidewater	1 56 a ....

The above prices are at tidewater in carloads and larger lots. For quantities less than 2,000 lbs., but not under 1,000 lbs., $2.00 per ton additional is charged, and less than 1,000 lbs., $8.00 per ton additional.

SHEETS

The following prices are for 100-bundle lots and over f. o. b. mill; smaller lots $2.00 per ton higher.

Gauge—	Black	Galvanized.	Gauge—	Black	Galvanized.
Nos. 22 & 24	1 80	2 75	No. 28	2 05	3 10
Nos. 25 & 26	1 85	2 85	No. 29	2 10	3 20
No. 27	1 90	2 95	No. 30	2 15	3 40

IRON AND STEEL AT PITTSBURGH

Bessemer iron	16 65 a16 90
Bessemer steel, f. o. b. Pittsburgh	23 00 a24 00
Muck bars	31 00 a32 00
Skelp, grooved steel	1 45 a 1 50
Skelp, grooved iron	1 70 a 1 75
Ferro-manganese (80 per cent.), seaboard	50 00 a ....
Steel, melting scrap	12 50 a13 00
Steel bars	1 40 a ....
Black sheets, 28-gauge	2 05 a 2 10
Galvanized sheets, 28-gauge	3 05 a 3 10
Blue annealed, 10-gauge	1 60 a 1 65
Tank plates, ¾-inch and heavier	1 40 a 1 45

Rubber Still on Decline

Quiet conditions still rule in the crude rubber markets on both sides of the water. Buyers seem to be disposed to purchase merely for present needs, pending fresh developments on the situation. The prices are considerably lower than last month. Quotations on October 9th were:

Up-River—	
Fine	78 a 79
Coarse	48 a 49
Island Fine—	
Coarse	28 a 29
Cameta	36 a 37
Caucho—	
Ball	49 a 51
Centrals—	
Corinto	43 a ..
Esmeralda	42 a ..
Guatemala, slab	41 a ..
Mexican—	
Scrap	43 a ..
Strips and scrap	48 a ..
Guayule	Nominal
Balata, sh't	58 a 60
Ciudad, b'k	49 a 50
Trinidad, b'k	Nominal
Africans—	
Massai, red	48 a ..
Red C'go	Nominal
B'k C'go	48 a ..
Soudan—	
Niggers	Nominal
Accra, lbs.	28 a 30
Gambia, prime	50 a 51
East India—	
Sm'k, sh'ts.	65 a 66
Ceylon, bis. and sh'ts.	53 a 54
Pale crepe	53 a ..
Pontianac—	
Prime plantation	6 a ..
Palembang	5 a ..

Scrap Rubber

DOMESTIC

Boots and shoes	8¼a 8½
Tires—	
Automobile	8¼a 8½
Bicycle, pneumatic	5 a 5¼
Wagon and carriage, solid	9 a 9¼

FOREIGN

Automobile tires, plain	10½a 10¾
Bicycle tires, with beads	3 a 3½

The Future of the Motor Truck Industry

Owners Must Learn to Care for Trucks—That Service Methods Must Be Changed Is Opinion of the Automobile Chamber of Commerce

A GREAT amount of speculation and conjecture in regard to the future of the motor truck industry has been current during the past few weeks, following the voluntary retirement of the American Locomotive Company, makers of Alco motor vehicles, from the motor truck field. Because a concern of almost unlimited financial resources has decided to step down and out of the motor vehicle business, the question of what is going to happen to the industry as a whole has suddenly been made an important topic of controversy. Some people have even gone so far as to state, without much actual insight into conditions, that no company engaged in the manufacturing and marketing of commercial motor vehicles is making any profits, basing their assertions upon the experience of the American Locomotive Company.

A great deal of space has been devoted lately to the conditions which prevail in the industry, and in particular to the misfortunes of the makers of the Alco products, so that everyone has, at this time, a very fair idea of the reasons for their failure to continue in motor production. In connection with the commercial side of it, however, one important point seems to have been generally overlooked by those who are expressing pessimistic views of the entire truck business, and that is that the American Locomotive Company did not make any better success with its passenger motor car business than it did with its truck business. There are many successful manufacturers of passenger motor cars to-day, and it is only logical to expect that the same condition will be equally true with truck manufacturers when the truck industry reaches the same age and general business development that the passenger car industry has reached to-day. And, as in the case of the American Locomotive Company, it is equally logical to expect that methods which prove disastrous in the motor car business are going to prove just the same in the truck business.

While tremendous strides have been made, especially in the last three years, in the truck business, it must be remembered that the truck industry is still much younger than the passenger car business. The motor car business has grown to be one of the leading industries of America within a space of time so short as to be almost incredible, were not the actual figures on hand to substantiate it. What then, must be the future of the truck industry? It is definitely assured, and there is little doubt that when the truck industry reaches the same business development stage as the passenger car industry has reached to-day, it will have a tremendous volume.

So far as actual mechanical development is concerned, the motor truck has derived a great deal of benefit from the fact that the passenger car industry was first in the field. On the other hand, it has been handicapped at times by this precedence, owing to the unbusinesslike principles pursued by many of the companies engaged in making and selling motor cars, a condition for which the rapid growth of the business has been directly responsible.

Unbusinesslike methods, such as price cutting, absurd guarantees and extravagant promises of free service, time payments without adequate security and insufficient financial resources to finance such payments, extravagant overhead and sales expense, and such kindred evils, have been indulged in time and again by short-sighted companies, and some of these have actually survived in the passenger car business, and are still struggling along. But when the same methods are applied to the truck business, the result brings swift and certain disaster.

Nevertheless, some truck companies, in their anxiety to force their product upon the market, have resorted to the above-mentioned disastrous methods, and the result has been that not only the companies themselves have quickly become bankrupt, but their methods have produced a bad effect on the entire industry. Customers who, in the ordinary course of business, would never dream of expecting the concessions which they receive from these unbusinesslike methods, and who would not think of selling their own products on a similar basis, have been educated to expect the same concessions from every company engaged in the truck business, and consequently the truck companies that are endeavoring to market commercial vehicles on a strictly businesslike basis, by getting a price which affords a fair profit, and by giving reasonable service to their customers, have unfortunately had to suffer from the sins of the ill-advised weak sisters of the business.

And what of the customers of these companies which have pursued this reckless course in bankruptcy? Have the purchasers of these trucks benefited by obtaining them at a price which was less than their cost of manufacture, and by getting unlimited guarantees of service, etc.? They may have profited temporarily in the first cash outlay, but this benefit has been lost, many times over, by their expense in keeping the trucks in operation after the company which produced them has gone out of business, via the bankruptcy route.

Probably no other piece of machinery is subject to the same amount of neglect and abuse as a motor truck, on the average. For this reason it is essential to the purchaser that the company producing the truck remain in business if the customer is to receive the maximum service from the truck. Therefore, it is of the utmost importance and ultimate benefit to the purchaser of motor truck equipment to deal with a company which is sound financially, and conducts its business on a conservative and businesslike basis.

The product of a truck company which endeavors to sell trucks by cutting prices and by extravagant service guarantees should be strictly left alone by intending truck purchasers. In the first place, the quality of the truck itself is greatly subject to suspicion where such methods are employed to sell it, and in the second place, these same methods spell certain failure for the truck company, with the consequent complete loss of every kind of service to its customers, to say nothing of the depreciation in the second-hand value of the truck.

For these reasons it is greatly to the interest of the customers of a company making motor trucks to have that company remain in business on a legitimately profitable basis, and it is worth while, in cold dollars and cents, to these customers to do their share in helping to maintain this condition by being willing to purchase their trucks at a price that affords a legitimate profit to the manufacturer and dealer, by being reasonable in requests for service, and by co-operating in every possible way to keep their own truck equipment in the highest state of efficiency.

If the users of motor trucks were but far-sighted enough to refuse to deal with truck companies which offer their product on unbusinesslike terms, it would be to their distinct advantage. It is extremely difficult for a customer to look at the matter in this light. They imagine that they are obtaining trucks on cheaper terms than their competitors in business, and consequently many times accept trucks on so-called confidential terms. But it is reasonable to assume that if they obtain trucks in this way, practically every other purchaser of that make of truck will get similar terms, and some even better, depending on the

keenness of the competition, so that the apparent advantage may be changed to a loss, as every truck that is sold by the company brings it that much nearer to its ultimate failure. This is not theory. The path of the motor truck industry, short as it is, is already strewn with such failures, directly traceable to the same causes.

Within certain limits, a reduction in the price of trucks is justified by an increased volume of business, but at the present time no truck manufacturer has reached the point where any appreciable cut in prices is safe. Consequently, when a company suddenly announces distinctly lower prices on its products, it is safe to assume that this company has been experiencing difficulty in marketing its trucks, due to constructional defects, obsolete design, or other causes, and is taking the price-cutting method of unloading, with more than a probability of going out of business, or abandoning that make or model, plausible explanations to the contrary notwithstanding. When these so-called bargains are offered, the prospective purchaser should take pains to inform himself as to the financial condition of the company, as such an investigation will be pretty sure to explain the reason for the sudden drop in price.

The question of service to customers is a vital one at present in the truck business. And, because of the comparatively small number of trucks in service to-day, compared with the number that will be in use eventually, the service question is much more prominent now than it will be later. The reason for this is perfectly logical, and will follow naturally as the number of trucks in operation increases. The users of trucks will, as they become more experienced, depend less and less for service on the company producing the trucks and more and more on their own organizations, which will gradually, of necessity, become capable of taking care of this work.

This does not mean that there will be a tendency or inclination on the part of the truck manufacturers to evade responsibility after the trucks are sold. At present, when the number of trucks of one make in any one locality is comparatively small, it is possible for the company itself, or its dealer to maintain a service station where practically all of the trucks of that make are repaired. In some cases, where there are several hundred trucks of one make in a locality, it is becoming difficult already for a single organization to take care of them. What will happen when the several hundred increases, in a few years, to several thousand? Then it will be a physical impossibility for a company to handle all of the routine repair and overhaul work on its trucks. As the number continues to increase, the independence of the truck owner from the central service station will increase accordingly. In time a truck company's service station will become practically a depot for the distribution of spare parts, and the truck owner will take care of his own repair work, if he operates enough trucks to make it to his advantage to do so, or he will have it done at some repair shop which has been established in his vicinity in answer to the inevitable demand, in the same way that horse-shoeing and blacksmith shops are found to-day.

Nothing is quite so good as concrete figures in illustrating a matter of this nature. Suppose there are five thousand trucks of one make in a certain city, a supposition which will certainly be true inside of ten years. Every truck should be thoroughly overhauled at least once a year, and the average time for such an overhaul is about two weeks; longer when repainting is done. This means that there will be almost two hundred trucks constantly in the shop for this purpose, without taking to account the number that will come in between times for adjustments, minor troubles, damages from collisions, etc. And five thousand is not the limit, by any means; it is only the beginning. When the realization of the amount of floor space necessary to accommodate several hundred trucks, with room around each one to work, is grasped, the utter impracticability of taking care of them at any central service station is apparent. The advantage of not being dependent on a central station is already being realized by some of the larger users of motor trucks, who maintain well-equipped garages in charge of competent men, and this is the inevitable answer to the service question.

Users of motor trucks, especially those who have gone into motor equipment on a large scale, are beginning to realize that the benefits derived from the employment of trucks is in direct proportion to the care and system with which the trucks are handled. The large department stores of the United States, with their elaborate delivery service, probably have studied the motor truck problem more carefully than any other of the large classes of business. At the present time practically all of the largest stores in the various business centers of the country are handling the bulk of their delivery business by motor trucks, and many of them have completely motorized their delivery equipment, with extremely satisfactory results in increased service at lower cost, and a resultant increase in business.

The stores that are making the most marked success with motor trucks are those which are handling their trucks on an intelligent and businesslike basis. Where there are enough trucks to warrant it, a more or less complete service garage is maintained for the proper care of the trucks, with carefully trained men in charge. Detailed records of the operation of every truck are scrupulously kept, and the human element of the driver is eliminated as far as possible by an accurate checking system. These stores understand thoroughly the importance of keeping their motor equipment up to its greatest efficiency, and to this end they maintain service departments and keep accurate records of every truck, making their purchases judiciously with their own experience as a guide.

It is worthy of notice that large users of motor trucks in the largest cities such as the department stores and many concerns in other lines of business, as meat packing, illuminating and lubricating oils and others are standardizing their motor equipment, as fast as possible, with one make of truck. Most of them have now gotten past the experimental stage and have determined, by actual service, the make of truck that is best suited to their needs. This, of course, is the natural and expected procedure. By this process of standardization their service problems are greatly simplified and the cost of operation and maintenance is lessened. It is also worthy of note that the great majority of the large retail stores of America and the other users of trucks in quantity are standardizing with makes of motor trucks that are the product of companies noted for the highest quality in manufacturing, for conservative and sound business methods, and for assured financial stability. It is companies of this type that are making a success of the motor truck business, and will continue to do so and to give stability to the whole industry. They are the fittest that that will survive.

VITRIFIED BRICK FOR COUNTRY ROADS

The U. S. Department of Agriculture has recently issued as Bulletin 23 of the new department series a contribution from the Office of Public Roads on vitrified brick as a paving material for country roads.

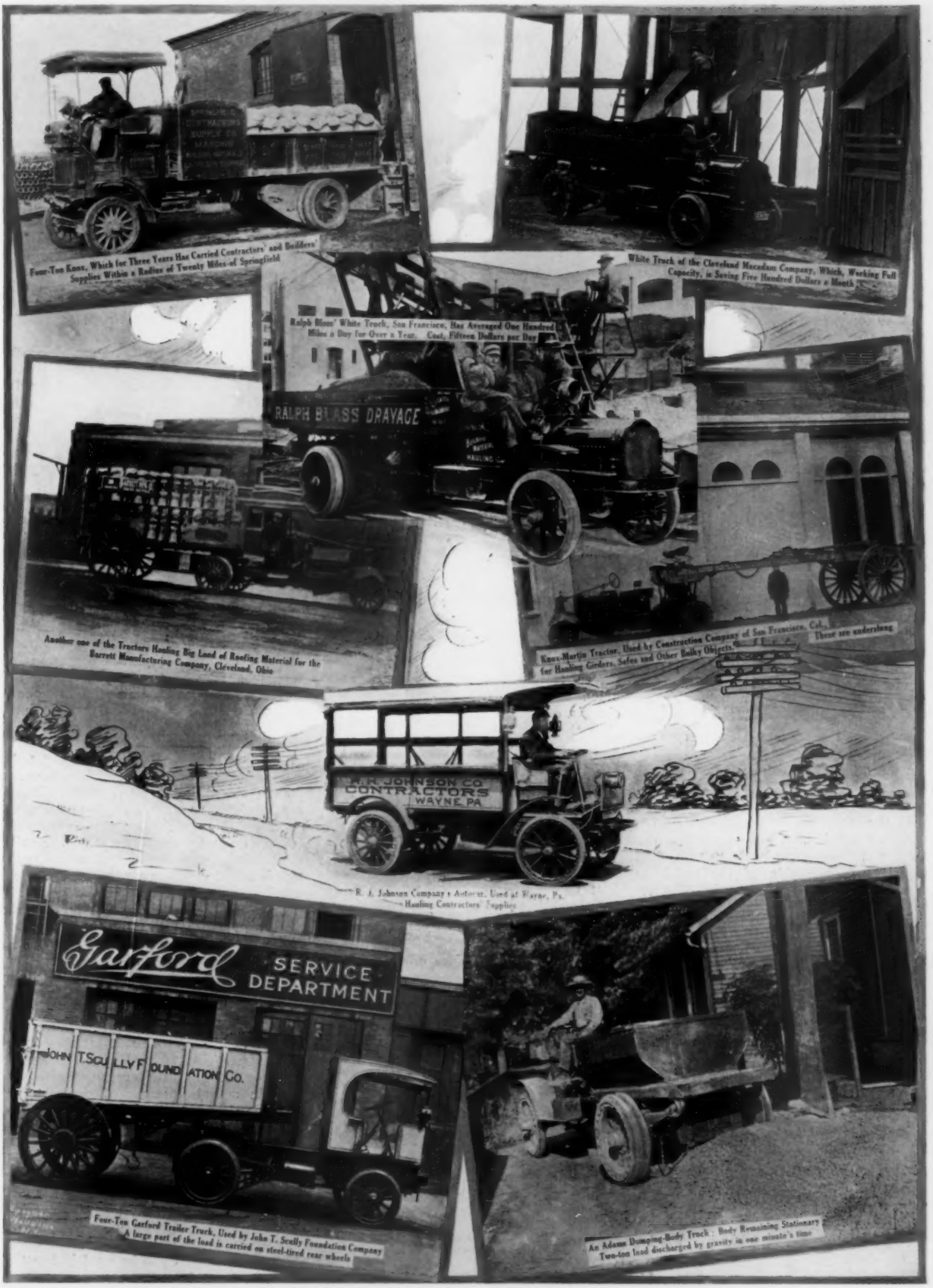
Brick roads have four distinct advantages: Durability, easy traction, ease of maintenance and good appearance. The high first cost is a disadvantage. The materials used and the process of manufacture are described as well as methods of testing the bricks. The construction of brick roads is set forth in detail and the various steps in the process are illustrated. Especial attention is directed to the importance of proper engineering supervision.

The appendix gives the method for inspecting and testing paving brick as recommended by the American Society for Testing Materials.

American Motor Wheels Company, Crawfordsville, Ind., capital $600,000, auto trucks, etc. Directors: W. H. Owen, S. C. Rowland, John Vajen Wilson, E. G. Darnell, Gilbert Howell, Frank M. Boyd, Chas. M. McCabe.

Palmer-Moore Company, Syracuse, N. Y., is bringing out a new design of water cooled engine, which will be described in these columns at an early date.

Dyneto Electric Company, Syracuse, N. Y., has equipped a Chase truck with one of its well known Entz electric starters.



Various Forms of Motor Truck Bodies Used by Contractors

AGENCY OPPORTUNITIES

[In this section, each month will be listed the open territory of leading commercial car manufacturers. This affords an opportunity for dealers or those wishing to take on agencies, to learn which makers are seeking agents in their vicinity.—EDITOR.]

Stegeman: Stegeman Motor Car Company, Milwaukee, Wis. Open territory in Denver, Col.; St. Louis, Mo.; Kansas City, Mo.; Ohio, Pennsylvania and the Pacific Coast.

Lippard-Stewart: Lippard-Stewart Motor Car Company, Buffalo, N. Y. Open territory in Kansas City, Mo.; Milwaukee, Wis.; Cleveland, O.; Memphis, Tenn., and Philadelphia, Pa.

Koehler: H. J. Koehler Sporting Goods Company, 1709 Broadway, New York City. Open territory in San Francisco, Cal.; Portland, Ore.; Omaha and Lincoln, Neb.; Atlanta, Ga.; New Orleans, La., and Galveston, Tex.

B. A. Gramm's Trucks: Gramm-Bernstein Company, Lima, O. Open territory in Kansas, Nebraska, Oklahoma, Colorado, Wyoming, Florida and certain portions of Illinois, Indiana, North Carolina, South Carolina, Virginia, Pennsylvania, Maryland and West Virginia.

Garford: Garford Company, Elyria, O. Open territory in Nevada, Idaho, Montana and Wyoming.

Monitor: Monitor Automobile Works, Chicago, Ill. Open territory in San Francisco, Cal.; Atlanta, Ga.; Louisville, Ky.; Boston, Mass.; Minneapolis and St. Paul, Minn.; St. Louis, Mo.; New York, N. Y.; Philadelphia, Pa.

Stewart: Stewart Motor Corporation, Buffalo, N. Y. Open territory in Kansas City, Mo.; Memphis, Tenn.; Nashville, Tenn.; Atlanta, Ga.; Milwaukee, Wis.; Birmingham, Ala.; Louisville, Ky.; New Orleans, La., and Richmond, Va.

Standard: Standard Motor Truck Company, Detroit, Mich. Open territory in North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana Texas, North Dakota, South Dakota, Kansas, Arkansas, Oklahoma and certain parts of New York, Pennsylvania, Wisconsin, Virginia, Iowa and Ohio.

Rowe: Rowe Motor Manufacturing Company, Coatesville, Pa. Open territory anywhere excepting New York City, New Jersey, Eastern Pennsylvania, Delaware, Maryland and District of Columbia.

Kelly: Kelly-Springfield Motor Truck Company, Springfield, O. Open territory in Albany, N. Y.; Utica, N. Y.; Salt Lake City, Utah.; Atlanta, Ga.; Washington, D. C.; Jacksonville, Fla.

Best and Flint: Durant-Dort Carriage Company, Flint Motor Wagon Department, Flint, Mich. Open territory in all states excepting Iowa and Texas and a few counties and towns in the Central and Eastern States.

Republic: Alma Motor Truck Company, Detroit, Mich. Open territory in New England states, Rochester, N. Y.; Philadelphia, Pa.; Kansas City, Mo.; Louisville, Ky.; St. Louis, Mo.; New Orleans, La.; Milwaukee, Wis.; Indianapolis, Ind., and Des Moines, Ia.

PEERLESS TRUCK FOR HAULING BRICK

Among the many uses to which the commercial car is put, that of brick delivery is especially severe, because the loads are in most cases heavy, and the roads which are traversed are very unfit.

In most brickyards the roads are simply dirt, which after a heavy rain make traveling with a full load very difficult. Then the destination is not generally right on a good road, but it is necessary to drive up over pavements and through open lots to the side of the building where the bricks are needed. Water, gas, etc., are being installed and ditches dug to lay the pipes; this results in piles of earth here and depressions, sometimes deep, there. The truck has to get over all these varying conditions, where traction is not the best, with much straining and distortion of the chassis, etc.

In the accompanying illustration is a Peerless 5-ton truck fitted with the Peerless screw power hoist, and used with success by the American Building Brick Company of Cleveland, O. A top-hinged automatic tail gate facilitates quick unloading. The body is unique in appearance, as it resembles very closely a pile of bricks on the chassis. Dirt thrown up out of ditches can be seen in the cut, which shows an average destination of the brick truck.

A Novel Brick Body

War is on between the Bangor and Aroostook Railroad and the United States Post Office Department. The railroad has refused to carry mail on its Fort Fairfield and Limestone branches, and auto trucks have been pressed into service by the Post Office officials to relieve the congestion of mail in northern Maine. People along the company's line appealed to the Post Office Department when the railroad refused to carry the mail, and trucks were put on as soon as they could be obtained. The cause of the difference between the railroad company and the federal authorities is a bill of $240 for mail messenger service.

Providence Ice Company, of Providence, R. I., employs a 1500-lb. Kissel Kar wholly for special delivery to customers, besides two four-ton Kissel Kar motor trucks used for distributing ice to its various substations. The management of the company states that it is impossible to compute the earnings of the special delivery wagon, for they have to measure them with the pleasure and satisfaction of their customers, rather than in actual dollars and cents. The melting of the ice in transit has been reduced from 5 to 1 per cent. in the substitution of motor driven vehicles.

Additional orders for the Packard trucks have just been placed by the Standard Oil Company, making a total of twenty-two Packards in the service of the company. The new equipment, consisting of standard chasses equipped with tank bodies, is to be used in Seattle and San Francisco.

Personal Items

C. T. Meyers, who was with the General Motors Company at the New York branch, and with the Rapid Motor Vehicle Company at Pontiac, Mich., has opened Detroit offices and will act as adviser to prospective purchasers of motor trucks.

J. H. Mack, who for several years has been associated with the selling department of the Boston branch of the American Locomotive Company, has accepted a position with the local branch of the Autocar Company. His duties will be supervisor of Autocar sub-stations throughout New England.

W. R. Smith, who left Newark, N. J., several months ago to take charge of the engineering department of the Hartford Suspension Company, at Jersey City, has returned to Newark to join the sales force of the White Company, and will hereafter devote his energy to the sale of White trucks.

A. J. Jackson, a progressive motor truck dealer, of Syracuse, N. Y., has recently added the Republic truck to his line of Commercial cars. Owing to the increase in his business it was necessary for him to enlarge his quarters, which he has accomplished by purchasing the Cronin Garage, 571-77 S. Clinton Street. He now has one of the largest and most completely equipped service stations in the state of New York, outside of New York City.

New Agencies

Metz Company, Waltham, Mass., has opened an agency at 2375 Broadway, San Diego, Cal.

Chambers, A. Company, Indianapolis, Ind., has been incorporated to deal in motor trucks.

Bulkley, M. S. & Company, Los Angeles Cal., have taken the agency for the Perfex commercial car.

Commercial Electric Company, 93 N. Park Street, Portland, Ore., has taken the agency for the Wilcox Trux.

Mercury Motor Truck Company, 4110 Halstead Street, Chicago, Ill., has opened a new service station at 43d & Halstead.

Neely & Ensor, Mt. Royal Avenue and McMechen Street, Baltimore, Md., have taken the agency for the Kelly motor truck.

Smith, Jesse A., Auto Company, 215 Wisconsin Street, Wilwaukee, Wis., has taken the agency for the Universal motor truck.

Alma Motor Truck Company, manufacturer of the Republic truck, has opened export offices at 17 Battery Place, New York City. R. V. Warman is in charge.

Mack Motor Truck Company, Broadway & 57th Street, New York City, has opened a branch in Springfield, Mass., under the management of E. N. Wright, with offices and service station at 88 Birnie Avenue.

Broadway Electric Company, 1223 Broadway, Nashville, Tenn., has been formed by Sydney W. Riddle and Eugene R. Howard. The company will handle the Waverley electric pleasure cars and trucks.

Lord Motor Car Company, Los Angeles, Cal., handling the Maxwell and Garford for southern California and Arizona, has taken the agency for Reo trucks in the southern California territory.

The Stegeman Motor Car Company, Milwaukee, Wis., has recently established important distributing stations at New York City, Boston, Mass.; Albany, N. Y.; Hudson, N. Y., and London, Canada.

Rowe Motor Manufacturing Company, Coatesville, Pa., has opened an agency in Philadelphia, Pa., under the name of the Rowe Truck Sales & Service Company, with temporary quarters at Broad Street.

Breeland, W. H., 805 Woodward Avenue, Detroit, Mich., has taken the sale of the output of the Trojan Motor Truck Company, which manufactures a one-ton truck at $1800 list price, and a three-ton truck listed at $2500.

R. L. Oakley, of Detroit, has recently completed an agency deal with the Commerce Motor Car Company, to handle the Commerce half-ton light delivery truck for the state of Oregon. He will remove from Detroit to Portland, where he will make his headquarters.

L. E. Harmon, formerly manager of the Myers-Abrams Company, distributor of the Lauth-Juergens truck, announces that he has taken over the Atterbury Boston Truck Company, and will handle the product of the Atterbury in the temporary quarters at 1619 Blue Hill Avenue.

Johns-Manville, H. W. Company, New York City, has opened a branch office and warehouse in Galveston, Tex. This makes three offices in Texas, viz. Houston, Dallas and Galveston. At the last named place stock for distribution to the different offices throughout the firm's Texas territory will be consolidated.

Hunt Automobile Company, San Diego, Cal., has been reorganized, renamed and its capital doubled. It will hereafter be known as the Davies-Leavitt Company, the names being taken from the presidents of the Hunt Automobile Company and the J. W. Leavitt Company. E. G. Davies, president and general manager of the new company, held a similar position with the Hunt Company. J. W. Leavitt & Company are coast distributors of the Overland, and have their main office in San Francisco. The northern firm will have an interest in the new firm of Davies-Leavitt Company. Agencies will be established in a number of the smaller towns that have had no representation before, and Overland service stations will be found all over the two southern counties. This new firm will continue to handle the Kissel Kar and Federal lines.

PACKARD'S NEW TRUCK CATALOG

The Packard Motor Car Company, Detroit, Mich., has just issued a beautiful 47 page catalog 11 x 14 in. on a fine coated paper, showing the different uses to which Packard Trucks are put and going into detail as to the construction.

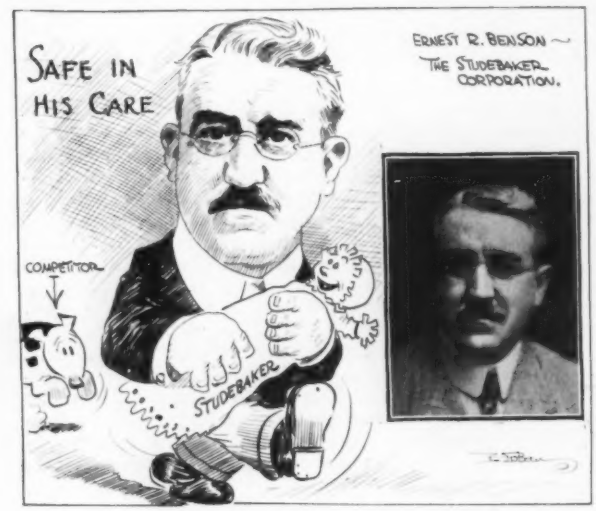
Retail merchants of Washington and Baltimore are considering establishing a motor truck line between those two cities to reduce the freight rates.

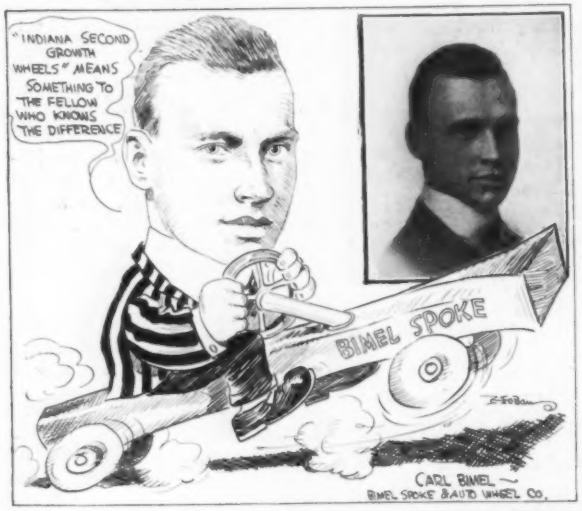
Federal Motor Truck Company, Detroit, has issued a Blue Book of Traffic, dealing with motor trucks and the merchandise problem they solve. Several very interesting pages are devoted to describing and illustrating the construction of Federal trucks.

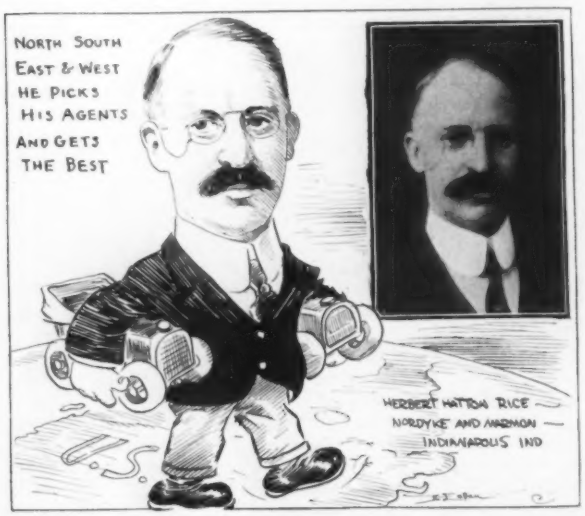
Motor Truck Club of California has installed the following officers for the ensuing year: W. F. Wood, president; M. S. Bulkley, vice-president; Geo. B. Harrison, secretary; R. H. Stevenson, treasurer; W. E. Barnes, H. L. Weisbaum, Thos. F. Whalen, W. W. Coldwell, Watt Moreland, Theo. Hobgood, C. R. Teaboldt and W. B. Guyton, directors.

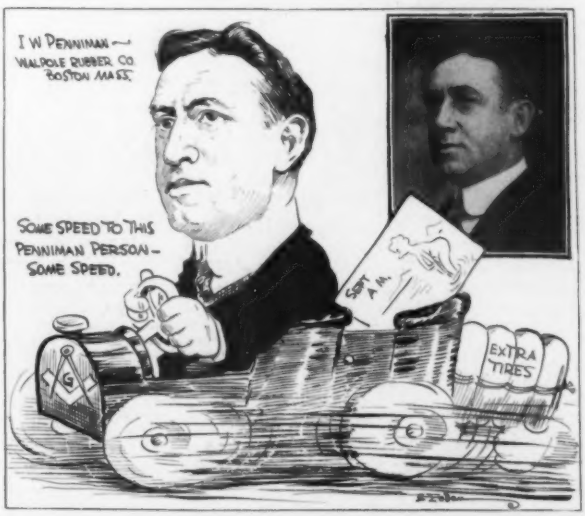
International Harvester Company, through A. L. Upton, district sales manager, denied the rumor that it would absorb one of the largest Detroit manufacturing plants. Mr. Upton reported an output of 15,000 of the 1,000-lb. delivery cars to be made by his company during 1914, and said that the company would stick to its lone model.

C C J GALLERY of SALES MANAGERS









A Successful Service to Merchants by Gibbons-Wetherill Service Company

SEVERAL times attempts have been made during the past six years in Philadelphia to operate a merchants' service with more or less success, usually, however, less. The failures were partly due to the early dates at which the service was attempted. The cars were crudder; there were not as many competent operators; merchants did not have the faith they now have in the motor-driven delivery vehicle.

At the present time the Gibbons-Wetherill Service Company, of 1419 Bainbridge Street, is supplying a successful and lucrative service to the merchants of Philadelphia.

The business was organized in August, 1912, by J. R. Ludlow Gibbons, who was at that time superintendent of the Autocar Service Station, who was joined by John Price Wetherill, Jr., garage superintendent of the Autocar Service Station. They were later joined by A. Hecker Wetherill, forming a co-partnership with a capitalization of $30,000. At this time the Autocar Company was willing to drop maintenance contracts which they had with George B. Evans, the well-known chain of drug stores of Philadelphia, and D. B. Martin, meat packers. Both of these companies were taken over by the Gibbons-Wetherill Company, which purchased for this service seven new Autocars. These cars were immediately put into the service of Evans and Martin, painted so that to all outward appearances they belonged to these companies, while in reality the cars belonged to the service company, who were simply being paid for the use of the cars, the service company furnishing drivers, helpers, and everything necessary for delivery. These cars are under contract to do so many hours work per day, and if they are not able to fulfill same extra cars are put on in this place. The merchant has no responsibility whatever in the matter, and his deliveries are cared for by the service company's men.

Package Delivery

On the first of April, 1913, the Gibbons-Wetherill Service Company decided to institute a package delivery service for merchants in general, and for this work five Ford cars were purchased, these being fitted with commercial bodies. In May two new Autocars were purchased to take care of a new contract of regular delivery work of Walls-Owen & Steinback Company. One of these was kept busy on this work, while the other was used three days per week serving the Medlar Biscuit Company, and was then used in the package delivery work for the rest of the week. The equipment now consists of fourteen autos, in addition to which they also make use of seven horse-drawn wagons for small routes in the center of the city. The George B. Evans Company finally decided to use four of the Fords and one Autocar, so that the Autocars have now been swung into the package service.

Details of the Package Delivery Service

This service is far ahead of that which could be supplied by any horse service company, and in many cases more reasonable than could be supplied by companies owning their own trucks.

Gibbons-Wetherill Fleet
Which gives a special delivery service to many Philadelphia firms

This package delivery is charged for by the package so that a merchant pays for exactly what is done for him, and does not have wagons at constant expense when his delivery requirements are small. Rates vary from seven to ten cents a package according to the number of packages handled per day. Under twenty-five packages, the rate is ten cents each; over twenty-five to fifty per day, nine cents each; fifty to seventy-five packages, eight cents, and over seventy-five packages a day the rate is only seven cents. This is exactly the same rate as charged by horse package delivery, and the result may be imagined. One of the large horse delivery companies has already been forced to quit, as it cannot compete with the service which the Gibbons-Wetherill Service Company is supplying with the trucks. Goods to be delivered in the suburbs have to be collected as early as 2 o'clock in the afternoon by horse, and then distant points are not reached that day. With the trucks goods are collected as late as 4 o'clock in the afternoon, and then reach the most distant points. The first trip from the central station is at 8 A. M., this load being packed in the vehicle the night before. This delivery covers the entire city to the extreme limits. The second delivery is at 11 A. M., which takes in a section south of Lehigh Avenue between the river. At 4 o'clock there is another delivery covering the entire city the same as the early morning one, and at 5.30 the cars cover the same route as the 11 A. M. delivery. In this way the goods are very quickly delivered to the customers, almost always the same day, unless purchased after 4 o'clock in the afternoon, and then they reach even the most distant points on the first delivery in the morning.

The cars call five times a day at the fifty-two stores which are now using the service, starting at 8 A. M., and up to 6 P. M. All packages are carried direct to the Bainbridge Street Garage, where the wagons back up to the routing department, when the driver throws them on a long bench, A, to be routed by a clerk, who passes them on to the boys who distribute them to a long series of partitioned tables, B, each section bearing a route number. Here they are written up on sheets, the form of which is herewith reproduced, and are then thrown across the aisle into the bins, C, from which the drivers on the different routes take them and place them in the wagon.

The bins C are made of frame-work separated by chicken wire so that the air circulates freely and the contents can be seen, as the light is not obstructed. The outer ends of the bins terminate in locked doors hinged at the upper ends. When these doors are unlocked for the driver he has already signed his sheet for these goods and becomes responsible for them from that time on. If he loses a package he has to pay for it.

Drivers Bonded

To prevent losses all drivers are bonded, so if anything is stolen, mislaid, or lost, the company does not lose. This is necessary, as the drivers collect C. O. D.'s, no additional charge whatever being made the merchants for this service.

Shipping sheets are made out, the Gibbons-Wetherill Company supplying its patrons with these bound in book form on white and yellow paper. When the drivers call for packages at the stores, the shipping clerk of the store turns over a sheet to the driver with the list of goods, name of the purchaser, etc. If there is sufficient goods to take up four or five sheets, five sheets is marked on each one, so that a driver cannot dispose of all the goods on a single sheet. A sheet is also given if no goods whatever are collected, same being marked, "no goods," to which the driver has to sign his name. This is a check on him to show that he has made his regular call at the store. These items are written on a white sheet with a carbon under it, thus transferring a duplicate copy to the yellow sheet. The white sheet is torn out and given to the driver, the yellow sheet remaining bound in the book as a record for the store. The drivers turn the white sheets over to the service company, so that all deliveries can be checked.

Advantages Over Parcel Post

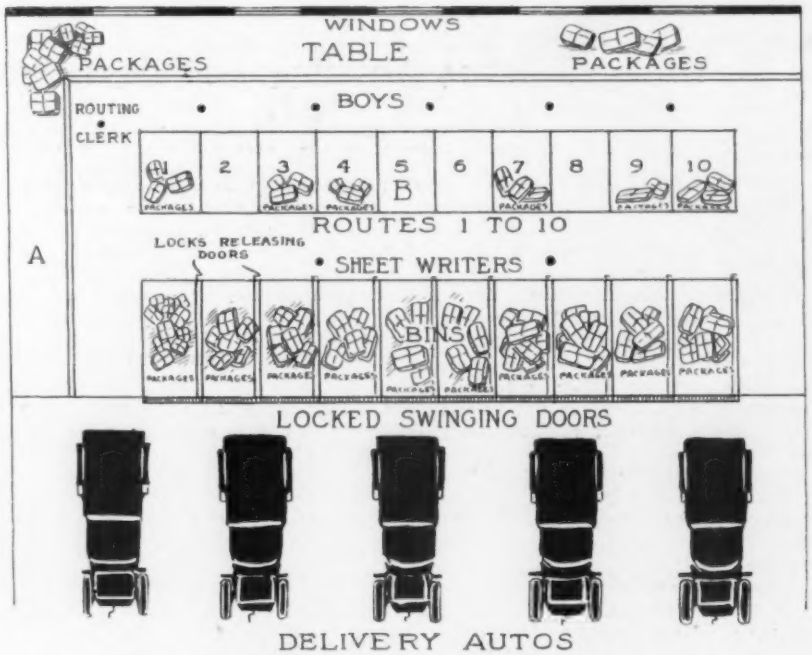
This system on account of the C. O. D. collections, which often run over $1000 a day, has its advantages to the merchants over sending by parcel post. The fact that the cars come to the store and collect, and that goods can be sent so late in the day, are also advantages of this system over allowing Uncle Sam to handle the goods.

Each driver has a helper so there are always two on a machine, and the goods are never left unprotected on the street. The boys drop off with several packages, make deliveries and collect C. O. D.'s under the supervision of the drivers, and are picked up again, thus saving time.

Systematic Inspection

As might be assumed from the training that these men have had in the maintenance and care of cars, there is nothing hit or miss about the inspection. Every car is numbered and is inspected every day by its driver. As there are fourteen cars, one goes into the shop each day to be carefully inspected, adjusted and tightened up, thus each car goes into the shop every two weeks. Once a year each car is given a thorough overhauling, taken down, and then put into first-class condition. In this way the entire equipment is kept on the road all the time. When a car is in the shop the goods which it would handle are distributed among the other machines, thus doubling up.

Most of the merchants have all of their goods delivered in this way, but a few who have horse teams allow the service company to take the rush, thus saving the horse.



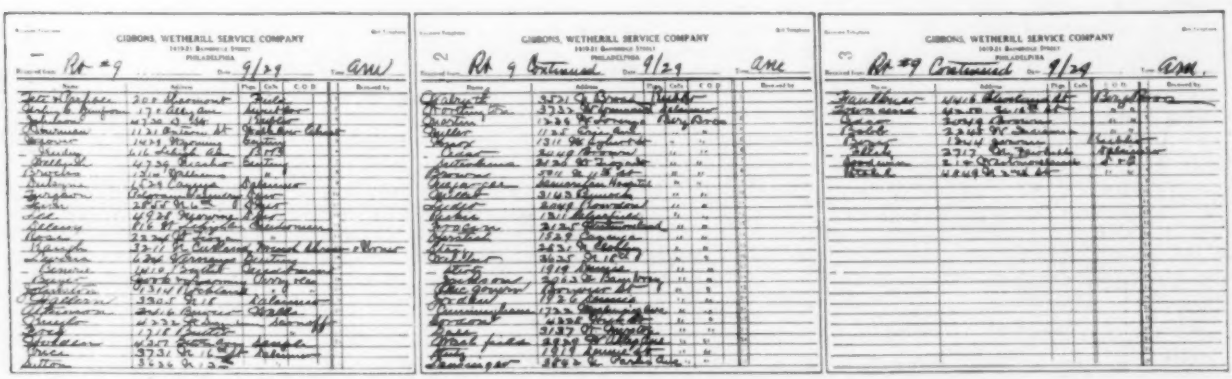
Arrangement of Routing Tables and Bins
Showing position of routing clerk, boys, sheet writers, locked bins, etc.

An Express Route

The service company also runs an express route to Media, which lies some fifteen miles from Philadelphia. This is operated directly for residents of that place, the goods carried being trunks, produce, market stuff purchased at the wharves, etc. A regular trip is made once a day.

The car rental business is paying, and is also growing. The package business is comparatively new. At the present time it is about breaking even, delivering about one-half of what the equipment is capable of handling. This would indicate that when they reach more nearly the capacity of the vehicles, which it is expected they will in the near future, there will be a tidy profit. At the time of this writing 4800 packages were delivered during the week, while the capacity of the vehicles is in the neighborhood of 7500.

There are now licensed in England 320,119 motor vehicles. These are made up of 175,247 motor cars, 132,245 motorcycles and 12,627 heavy commercial cars.



Set of Route Sheets for One Trip

Typical Trucks and Bodies Used by Milk Concerns

Wholesale Milk and Dairy Houses Find Trucks a Profitable Investment

Commercial Cars Save Forty to Sixty per Cent in Transportation Charges in Comparison With Railroad Freight Rates—Quickness of Motor Truck Eliminates Spoilage of Perishable Product

PROBABLY in no other line of business is quickness of delivery and promptness as essential as in the delivery of milk, cream and various dairy products. Of these commodities milk and cream are the most particular, as an hour's delay, especially in hot weather, may cause the milk to turn sour. The milk dealer's problem is one, therefore, in which speed counts foremost in the transportation of his product. Interviews with some of the large milk dealers in the city of Philadelphia have brought out the fact that in this line of business the motor truck has taken a strong foothold, and in many instances the motor truck is counted upon as a indispensable asset to the concern's business. In some cases, however, the complaint was made that, as milk is not hauled all day long, but mostly during the night and morning hours, it is impossible to keep the trucks busy and that the expense is more than if the same work were done with horses, although in each instance one or two machines were in service. A number of concerns operating trucks stated that, if they could keep the trucks busy, they would install additional ones, even though the upkeep cost is more than for horses.

Cost Records Very Scarce

One company considered the depreciation of a truck enormous in comparison with horses, and stated that it could sell its horses and teams at the end of ten years at nearly their original cost, while the truck would be out of commission entirely within five years. The latter statement was naturally quickly refuted by the writer, and it was found after some further questioning that this company did not keep a record of any kind as to maintenance, tire bills, etc., only gasoline and oil expenses being considered. No comparisons were ever made between the upkeep cost of the horse vehicle and the trucks, and still this concern considered the truck junk after five or six years, while they never stopped to consider that the truck displaced two or three teams and that the horses might die almost any time from sickness, colic, heat and overwork. Hay, feed, harness, shoeing and repainting of wagon are considered by this firm as part of the regular monthly bills, but

Saurer Used by Wawa Dairy
This truck travels about eighty miles per day and costs about seven cents per ton mile to run it

Saurer Used by Supplee Dairy
This machine displaces two teams and saves considerable time

Packard En Route From Concordville to Philadelphia
Fifteen dollars a day are saved by using a truck instead of the railroad

when a bill for a new truck tire makes its appearance then the boss "sits up and takes notice."

In every instance where the trucks were claimed unprofitable but necessary to meet competition, it was found that lack of system and non-keeping of cost records were directly responsible for the seemingly heavy expense of the truck. The trucks in every case were displacing two or more teams, cutting the time of delivery in half, and carrying heavier loads, but still they are claimed to be more expensive than horses. Why? Simply because the owners did not take time to figure out how much the trucks were saving them, but only imagined conditions.

Examples of Successful Users

In the following columns we print the experiences of a few well-known Philadelphia dairies. Before mentioning these it will be policy to state that in the retail door-to-door delivery of milk most concerns claim that the truck is of no use. When questioned as to why the truck could not be used, the old argument about the intelligence of the horse in his following the driver from one side of the street to the other, etc., is given as the usual answer; and that with the truck it would require two men, and that the expense of the two men and the cost of the upkeep of the truck would be very much more than the cost of two wagons and two men. It is also claimed that the two-horse outfits could cover a larger territory in the same amount of time that it would take with a truck, and that to make the truck a paying proposition in the retail line it would be necessary to take a few customers from each man's route in order to give the truck more work to do, etc., etc. The extra help and the numerous starts and stops are also said to cause excessive wear and tear on the machine, all of which, it is claimed, go to make the truck proposition too expensive for the retail trade. This is of course what the milk dealers claim. However, it is our contention that within a few years many milk concerns will deliver their product by commercial car from door to door, maybe not on account of choice but competition, for it will remain for someone to start the ball rolling by installing a few small gas or electric cars. Let one concern start it, then others will quickly follow. It may mean the use of two men to one car—but if the system is worked out intelligently and routes laid out properly, there's no reason why this mode of delivery should not be possible.

Wawa Dairy Saves $1500 in Three Months With a Truck

The Wawa Dairy operates a 6½-ton Saurer truck which was placed in service during January, 1912. According to figures furnished by Mr. Stewart, of this company, this truck saves about $500 a month in transportation charges, and besides makes it possible for the company to deliver its product in quicker time than would be possible with the

railroad. The company's farms are located in Wawa, Pa., eighteen miles from Philadelphia, where they produce about 5000 quarts of milk per day, which is delivered to customers in Philadelphia, Atlantic City and other resort towns in New Jersey. Formerly this company shipped by freight, which necessitated hauling the milk to the local depot by means of a three-horse team, and again hauling it from the Philadelphia station to their West Philadelphia milk depot or to Camden for re-shipment, as the case might be. This arrangement of hauling by freight was costly and more or less uncertain, so much so that the company made investigations with a view toward improving the transportation situation, and the matter of using trucks was then looked into. The result was that a 6½-ton machine was put into commission, which does all the hauling of this company at a great saving. A three months' record figured in maintenance of two three-horse teams together with freight would have been as follows: June, $1078.24; July, $1135.20; August, $1131.87; total for the three months, $3345.31, these figures being based on a careful computation of freight rates charged and expenses incurred under the old system. What it actually did cost the company with the truck for the same months is as follows: June, $486.01; July, $610.13; August, $686.66, a total for the three months of $1782.80. The difference in the former expense and the actual cost with the truck shows a saving of $1562.51.

This truck travels eighty miles per day, as follows: One round trip from Wawa to Camden, N. J., 22 miles each way, 44 miles; one round trip from Wawa to West Philadelphia, 18 miles each way, 36 miles, a total of 80 miles. The cost per day of operating exclusive of depreciation, according to the company's own figures, is $19.68. Figured out, the total cost per ton-mile, including depreciation, is .0691, or nearly 7 cents per ton-mile. These figures are not theoretical, but are taken from the company's books.

The Supplee Alderney Dairy

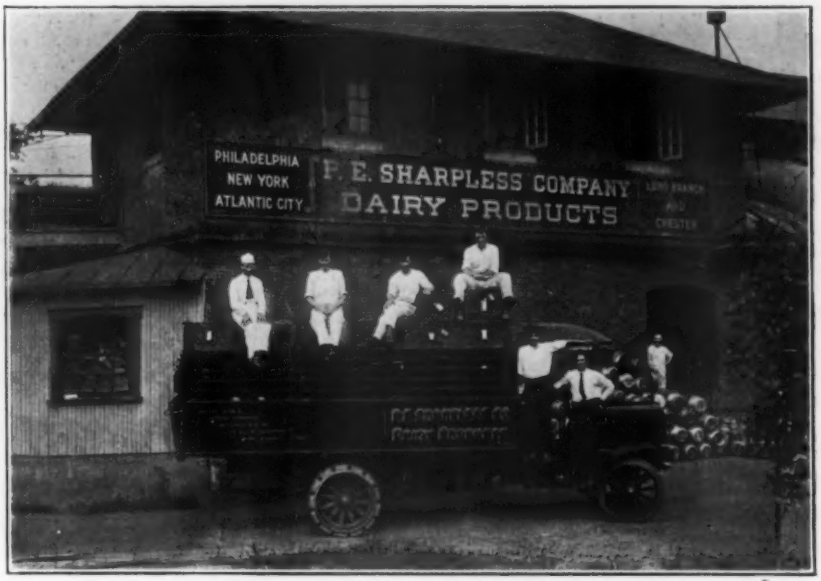
This concern also uses a Saurer, and uses it mainly for hauling milk from the train depots situated in various parts of the city to its pasteurizing plant at Eleventh and Jefferson Streets. This hauling is done during the day, while at night the truck hauls the bottled product to the various branch houses of the company. The branches are located in the suburbs, such as Germantown, West Philadelphia, etc. Although the truck is claimed by this company to be expensive in upkeep, still they could not do without it, and the advantages it has over the horse teams are many. A particular instance was cited by the proprietor of this company regarding the efficiency of the truck on the hills of Germantown. Over one particular road, which the truck passes daily, the hill is so steep that it would be simply impossible to take the same load up with horses. Another advantage this com-

Tractor Type of Vehicle Used by the Empire State Dairy Company
This vehicle has a capacity of twenty thousand pounds, and was built by the Garford Company, Elyria, Ohio. The body has doors at the sides as well as the rear

Knox Four-Ton Milk Truck
This machine is operated in greater New York City, by the White Cross Milk Company, for wholesale delivery, supplying restaurants, hotels, etc. It has been in constant operation for four years under all kinds of weather conditions.

Autocar Used by New England Concern

pany finds in the use of the truck is in hot weather, when a lot of extra hauling has to be done and special orders have to be filled. In this case the truck is put into use instead of the horses, which after a day's work are usually played out. This company broke in its own man to driving the truck, and has never had any trouble as regards the driving proposition. The owner claims that the solution of the truck proposition in his business is to keep it busy, which this concern certainly does. There are of course a few hours during the day in which the truck is standing idle, but the quickness with which the machine delivers the goods more than offsets the time during which it is in the garage. When questioned as to whether they do any delivering from the farm to the city, the answer was given that, if it were not for the condition of the roads which lead to their farms, which are located from 30 to 40 miles in various directions from Philadelphia, they would do all their hauling by truck, but the road conditions are such as to absolutely prohibit this venture.



The Sharpless Dairy, at Concordville, Pa.
Packard truck starting for Philadelphia with a load of butter. This truck averages sixty miles per day

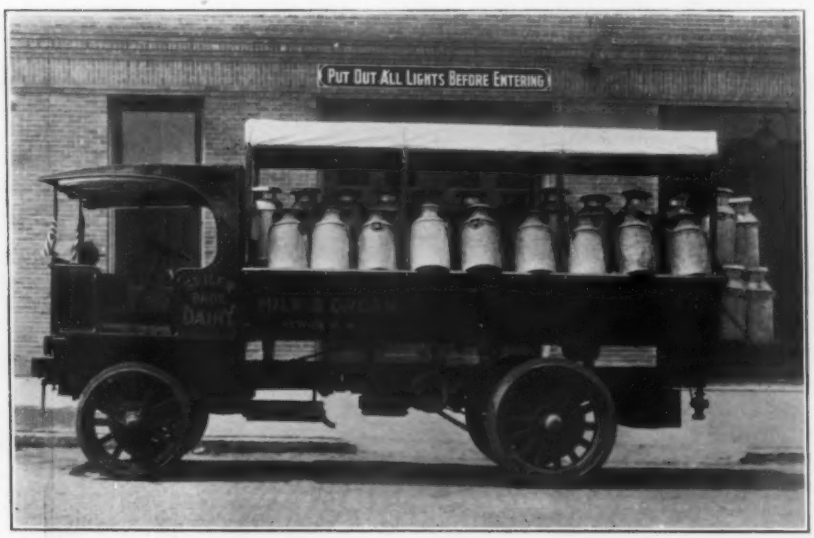
Trucks Advertise Business

Peter Hernig, wholesale dealer, finds the truck to be of great service in sending milk quickly to the retail concerns about the city. The truck is also used for suburban work, and displaces two wagons and three horses. The upkeep cost of the truck is considered by these people to be more than they bargained for, the chief expense being in the repair of tires and new tire equipment. Setting aside, however, this one objection, the truck is found to be a necessity and a great advantage in taking care of special orders, and at the same time as an advertisement for the business.

P. E. Sharpless Company

This company deals in condensed creams, butter and soft cheese, both retail and wholesale. They are enthusiastic about their success with the use of trucks. Three cars are at present being operated, one Autocar and two Packards. The Autocar is used entirely for suburban delivery and averages 45 to 50 miles per day. This car displaces five horses and two teams. It covers outlying districts, such as Germantown, Elkins Park, Chestnut Hill, etc., and makes house-to-house deliveries. The truck is usually run at a pretty fast clip, as many stops have to be made. This car was put into service about three years ago, and for a year was run on solid tires. During that first year the truck was constantly being repaired and the company was on the verge of discarding it. The trouble, however, was solved at the end of the first year, when solid tires were replaced with pneumatics, and since that time the truck has been working day in and day out without any trouble worth mentioning.

For transporting the finished product from the creamery to its branch houses in Philadelphia, Wilmington, etc., and for bringing milk from the farms to the creamery this concern uses the two 3-ton Packards. For this work in competition with the railroads a saving of 40 to 60 per cent. is reported. The route covered by these machines is from Philadelphia to Concordville, a distance of 23 miles; from Concordville to Wilmington, 12 miles; from Wilmington to Mendenhall, 10 miles, and from Mendenhall to Toughkenamon, 5 miles. In Concordville and Mendenhall are located the manufacturing plants of the Sharpless Company. From Concordville the trucks start out early each morning with a load of butter, cream and cheese, with the first stop at Philadelphia. Here the truck is unloaded and a load of empty boxes put on. The return trip is then made to Concordville, and another live load shipped to Wilmington. From here empties are again transported to either of the factories. Occasionally both of the trucks haul full loads direct to Wilmington to be shipped in turn by boat to Philadelphia. One feature of the routing as laid out by this concern is that, no matter what city the truck travels to, it never travels back empty, but always carries a load of empty crates. About 60 miles are averaged by each truck every day. The high freight rates charged by the railroads were the cause of this company investigating the truck proposition for its farm to creamery hauling. From the start the first Packard installed proved a great success, so that shortly afterwards a second machine was put into service. Not only do the machines do the work quicker, but an actual saving of $15 per day for each truck is reported.



Three-Ton Covered Panel Garford, Used by the Seiler Brothers' Dairy, Newark, N. J.

Motor Truck Design and Construction Made Plain

Advantages and Disadvantages of Different Types Discussed

By C. T. SCHAEFER, Member Society Automobile Engineers

This is the third installment of a series of articles by this well-known writer, covering in a non-technical way the various constructions now current practice in commercial car design. These articles will take up, in order, the general types of chassis, the advantages and disadvantages of each, illustrated by simple diagrams, and in logical order, motor construction, ignition, carburetion, cooling, lubrication, etc., until each part of the truck has been dealt with.

TYPES OF CYLINDERS AND THEIR PARTS

PART III

IN depicting the operation of two and four-cycle motors in the September issue, the various piston strokes were depicted, also the crank shaft revolution, however, as the piston travels up and down within the cylinders, forming a reciprocating motion, while the crank shaft rotates in its bearings, in order to impart a turning effort to the rear or driving wheels of the vehicle, through suitable power transmitting units. This conversion of reciprocating into rotary motion will be depicted below, under the general discussion of parts.

Depicting the construction of commercial car motors in one article would result in a very lengthy discussion, so the writer has decided to treat this subject in two installments, devoting the first installment to the construction of the cylinders and its various parts, and the second installment to crank case and its various parts.

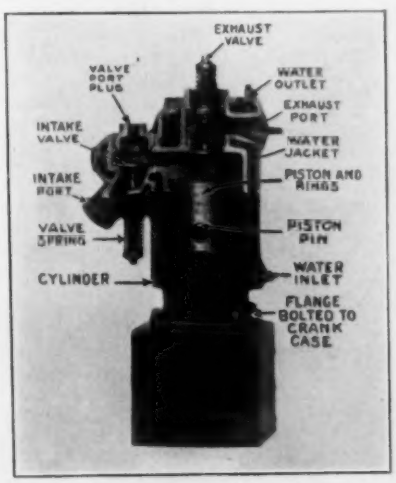


Fig. 1
Cutaway Section of a Cylinder
A combination of valve-in-the-head and L-head type is used

The construction of a gasoline engine is quite simple in its elementary form, being comprised of a cylinder, a piston provided with rings operating within the cylinder, a pair of valves or ports which permit at the proper time the entrance and escape of the gases, a connecting rod which connects the piston with the crank shaft, a case which supports the crank shaft and carries the valve operating mechanism, this valve mechanism being comprised of a shaft with separate or integral cams, suitable shaft bearings and a train of gears driven from the crank shaft; also a set of push rods which act as intermediate members between the valve stems and the cams.

The cylinders are usually castings made from close grained gray iron casting, provided with either water jackets for water cooling or fins, sometimes called ribs for air cooling. They are open at one end, while the other end is closed, forming the combustion chamber, in which the valves are located. The walls of this cylinder are made very smooth and are generally brought to a high polish by grinding, so that the piston with its rings can slide freely within the cylinder. This cylinder, with its parts, is bolted to the crank case, which carries the various other parts. Fig. 1 depicts a cylinder in section showing its various parts.

The pistons of gasoline engines are of the trunk type, as illustrated in Fig. 2, being somewhat longer than the diameter of the cylinder. Near the center of the piston bosses are formed, on the inner walls, which receive the piston pin, or gudgeon pin as it is sometimes termed. Near the top three or four grooves are turned into the piston which receive the eccentric piston rings, while near the lower end oil grooves are turned for distributing and collecting the surplus lubricating oil on the cylinder walls. These pistons are made a trifle smaller in diameter than the cylinder to permit of the expansion of the metal on the power stroke, while rings, carried on the piston, permit of flexibility, so that the gases cannot escape by the piston.

The crank shaft is a horizontal steel shaft carried in journals, or bearings, inside of the crank case, while offsets corresponding with the number of cylinders

Fig. 2
Connecting Rod, Piston and Piston Pin
Piston has three rings. Pin has bearing on piston bosses

are provided. These offsets are termed the crank pins and carry the large end of the connecting rod and its bearings; it is also provided with a taper or flanged end to which the flywheel is attached by means of a key and nut or bolts. Fig. 3 depicts the crank shaft of a four-cylinder motor with five main bearings, or journals.

The connecting rod depicted in Fig. 2 forms an intermediate link between the piston and the crank shaft. It is usually made a drop forging, the small end carrying a bearing for the piston pin, while the large is divided and carries the crank pin bushing.

It was stated above that the piston travel was a reciprocating motion while the crank shaft revolution was a rotary motion, and that it was necessary to convert this reciprocating motion into rotary motion, for the reason stated above.

This conversion of motion is performed by the connecting rod, as it is hinged to both piston and crank shaft and this conversion of motion may be depicted as follows:

When the piston is at its upper point of travel in the cylinder the crank pin

Fig. 3
Crank Shaft of Four-Cylinder Motor
This shaft has five bearings or journals. Shafts with different numbers of bearings are used

is standing vertical above the crank shaft, but as the piston and connecting rod move downward under the influence of the expanding gases within the cylinders, the crank pin is constrained and revolves downwardly, thus turning the crank shaft. The crank pin passes through its horizontal position and as the motion of the piston and connecting rod continues, finally reaches a position vertically below the crank shaft, the piston at this moment being at its lowest point and the crank shaft has been revolved through one-half revolution. As the piston begins to move upward upon its return stroke the crank shaft is again constrained by the connecting rod to revolve and gradually approaches and passes its other horizontal position and finally, when the piston is all the way up, the crank pin has reached its original vertical position again, having turned the crank pin through one complete revolution.

Thus it can readily be understood that the upper end or piston pin end of the connecting rod reciprocates in harmony with the piston, while its lower end or crank pin end rotates in harmony with the crank pin, converting the reciprocating motion of the piston into rotary motion of the crank shaft. It should be remembered that in multi cylinder engines the explosion force in one cylinder will move the piston downward in the other cylinder which is paired with it and is on the intake stroke. Thus in Fig. 3 the two end crank pins are vertical and while the right hand one is being forced downward it carries the left-hand pin with it. The left hand cylinder being on the intake stroke, it also forces the two lower crank pins upward, the corresponding cylinder of one of these being on the compression stroke and the other on an exhaust stroke. In this way the right hand pin is revolved upward when the lower pin on the compression stroke begins to move downward on the next power stroke which, as stated in the previous article, follows compression. This operation is followed by all crank pins on the various power strokes of the pistons.

In single cylinder motors this returned motion is obtained by the storage of energy in the flywheel on the power stroke, which liberates itself on the idle strokes of the piston. This was discussed under the heading of multi cylinder engines in the preceding article.

The operation of the parts in two-cycle motors was depicted previously, also the function of the valves in four-cycle motors, the function of the valves being to permit the entrance and escape of the gases from the cylinders at the proper time. These valves are termed poppet valves and consist of a disc of metal with a stem on one side, which closes a circular opening in the combustion chamber, being held against the seat in the wall by a coiled wire spring. The opening and closing of these valves is by a force imparted from the cam shaft, which will be treated in the second part of this article which will follow in the November issue. A typical four-cycle poppet valve and spring are depicted in Fig. 4.

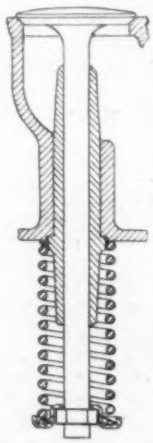


Fig. 4
Sectional View of Poppet Valve
It is closed by means of the spring shown

Automobile and commercial car engines of the poppet valve type are generally classified by the location of the valves within cylinder, as this point generally controls the entire construction of the motor, as well as the various factors which enter into its design. The various types of cylinders classified by their valve arrangements are as follows:

T-Head—A type in which all valves are located in pockets at opposite sides of the cylinders.

L-Head—A type in which all valves are located side by side in one pocket, on either right or left side of the cylinder.

Valve in Head—A type in which all valves are located in the cylinder head, placed vertically or at an angle.

There are also several other types which are combinations of those depicted above, having one valve in the head and the other in a pocket at the side, or both valves in a pocket at the side, one being located above the other.

The first and second types, namely the T-head and L-head, are by far the most popular type used in commercial cars. However, quite a few of the others may also be found. The first two types possess an advantage in that all working parts may be inclosed and thoroughly protected from grit. They also present a neater appearance in that it is a simple matter to keep them clear, as all parts are lubricated internally.

The writer is presenting several illustrations which depict these various types taken from illustrations furnished by the various makers of these engines.

Fig. 5 depicts the conventional type of T-head motor in which all the intake valves are located on the right side and all the exhaust valves on the left side, the valves being inserted through openings in the combustion chamber, which are covered by valve port plugs that carry the spark plugs. The piston shown in this view is of the conventional type, being provided with four eccentric piston rings, while the upper end of the connecting rod is clamped to the piston pin, the latter having its bearing in the bosses of the piston, the advantage of this construction being that a somewhat larger bearing surface can be obtained for the piston pin. The connecting rod is of the conventional type, as depicted in Fig. 2. It may be stated here that connecting rods used in American commercial car motors are invariably drop forgings made from .40 carbon steel of I-beam section. The illustration also depicts one method of enclosing the valve stems and operating parts by the barrel-shaped housings, which are divided vertically and held together by a flat steel circular spring. It will also be noted that the water enters the jacket directly under the exhaust valve, the object being to keep them as cool as possible to prevent warping and unnecessary valve grinding. This motor is built by a well-known motor builder and used in quite a few of the heavier types of commercial cars.

Fig. 6 depicts the conventional type of L-head motor in which all intake and exhaust valves are located on the left

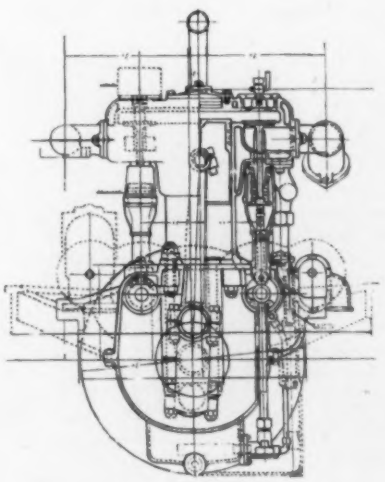


Fig. 5
Sectional View of T-Head Motor
Valves are located on both sides. Piston has four rings

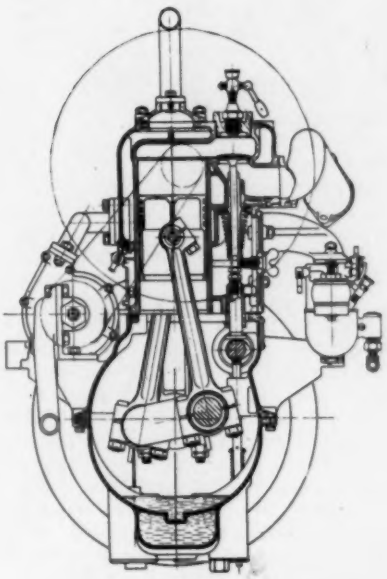


Fig. 6
Sectional View of L-Head Type
Both valves are located in the same pocket on the left side

side, the intake and exhaust valve of each cylinder being located side by side in a pocket. The valves have conical seats, as those depicted in Fig. 5, and are also inserted through openings in the combustion chamber, which are closed by the valve port plugs. The plugs which cover the intake valve openings carry the spark plugs, while the exhaust port plugs carry the relief or priming cups. In this motor the valve springs are of conical shape, the object of this being to obtain a more gradually seating of the valve. The valve stems and operating parts are also enclosed; however, two aluminum plates are used, each covering four valve stems. They are retained by a wing nut and stud, which may be quickly removed. The piston and connecting rods are of conventional design and similar to those depicted above.

Fig. 7 depicts a valve in the head type cylinder in which the valves are placed vertical and have flat seats instead of conical seats, as those depicted above. The valve stems only pass through the cylinder and for this reason the cylinder is divided in two parts at the top of the compression space. Valve guides are used to provide a bearing for the valve stems, and coil wire springs keep the valves closed; however, the valve mechanism is difficult to inclose as rocker arms are mounted on the cylinder which are connected with the valve operating mechanism in the crank case. External water brouches are used which connect the water jacket of the upper half with that of the lower part. This construction presents an advantage in that the entire compression space may be machined to a polished surface, thus reducing the tendency for carbon to collect in the combustion chamber and dividing the cylinder at this point also facilitates the removal of carbon when it does form. If this type of cylinder were cast in one piece it would be necessary to remove it from the engine in order to grind the valves, unless they were mounted in cages which could be removed.

Fig. 8 depicts another type of valve in head cylinder; however, in this type the cylinder is cast in one piece and the valves with their springs are carried in separate cages, so that they may be removed for grinding. This type of cylinder is little used owing to the complication of the valve mechanism, which is carried on the cylinder head and is inclosed in aluminum housings.

Fig. 1 depicts one type of the combination of types and is the only arrangement resorted to by American makers; the other type of placing one valve over the other has never been used on commercial car motors to the writer's knowledge, the combination in this type being identical with the construction of the other types from which they were derived, one valve being located in a pocket and operated directly, while the other is located in the other and is carried in a cage in the cylinder head and operated through a rocker arm. The remaining parts are of conventional design excepting the method of holding the piston pin in the cylinder. In this motor the ends of the piston pin are slotted and the piston is grooved at the center of the pin bosses, so that a wide ring can be inserted in the groove of the piston and the slots of the pins. The pin also has its bearing in the connecting instead of in the piston bosses. In any type of motor there is a possibility of the valve stem breaking and should this occur in a valve in the head type, considerable damage could be done by the broken part of the valve.

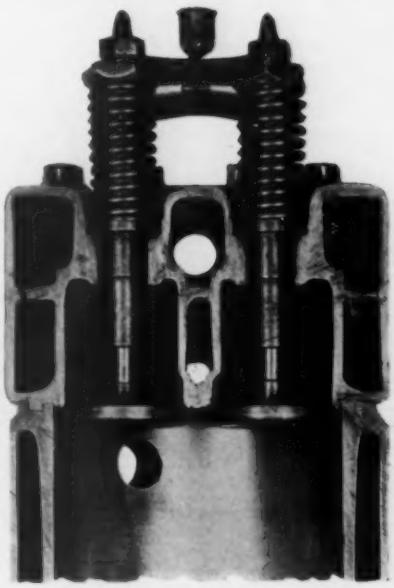


Fig. 7
Cutaway Section of Vertical Valve-in-Head Type
Valves have flat seats. Cylinder is divided at top of compression chamber

During the past year there has been a tendency to divide L-head cylinders of the motor used in light delivery wagons, so that part of the crank case could be cast integral with the cylinders. This construction, of course, presents advantages in the removal of carbon, valve grinding, finishing of the combustion space, as well as reducing the cost of manufacture. It remains, however, to be seen just what popularity this construction will gain in the heavier types of motors.

There are various ways of grouping cylinders, as they may either be cast single, in pairs or en bloc. Where they are cast single the motor becomes of considerable length and, of course, requires a much longer hood; this additional space when added to the loading compartment would naturally be of considerable advantage. Casting them in pairs shortens the motor somewhat. However, the ideal construction is obtained when the cylinders are cast en bloc, which permits of the shortest possible hood length. It also presents an advantage in the shorter length of the vital parts such as the crank and cam shaft, crank case, etc., as the space wasted can be put to good advantage by the increasing of the main bearings and the shortening of the unsupported parts of these shafts.

This method of cylinder grouping can be applied to any type of motor, or valve arrangement, and is not dependent upon any one construction. En bloc cylinder construction does present a very simple and neat motor, especially when all parts are properly enclosed.

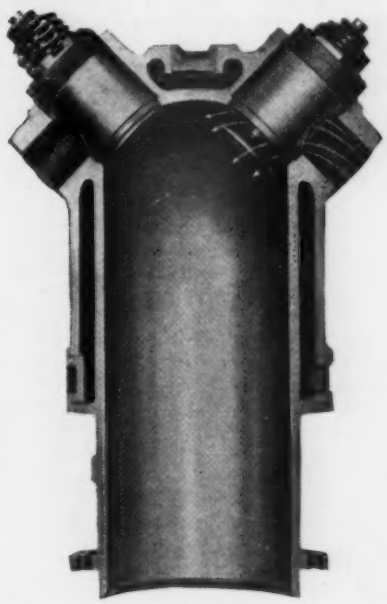


Fig. 8
Cutaway Section of Inclined Valve-in-Head Type
Cylinder is one piece; valves are enclosed in removable cages

Aluminum Alloys

Paper read by C. E. Cox before the Detroit Section of the Society of Automobile Engineers

THIS is just a presentation of some data that have been collected by some persons who have made extensive experiments and given me permission to use a certain amount of the data, which shows some very interesting things and should bring out further data from manufacturers.

Here are some of the elements that will alloy with aluminum: Iron, Silicon, Manganese, Chromium. These make hard and strong alloys, but they are very brittle and are not used commercially, except silicon, which is present as an impurity in most alloys. Here are some other metals: Cobalt, Nickel, Vanadium, Tungsten, Molybdenum, Tin, Antimony. These make hard alloys, but the melting points are too high, and the cost, in most cases, is so great that they are not considered. Silver and gold also will alloy with aluminum and make very good alloys, but, of course, the cost is out of the question. We next come to magnesium, which has been used in a number of alloys and which gives a very light metal but is not uniform, although it increases the strength of the alloy up to 10 per cent. of magnesium. The strength falls off with a higher percentage. One of the difficulties with these alloys seems to be their hot shortness. The next element on the list is copper, which makes a good alloy, with which we are familiar, and which is usually designated as No. 12. Zinc comes next and makes a good alloy, but is not much used because it is too brittle. Copper and zinc make good alloys, the one with which we are most familiar being designated as No. 31. There is another alloy called McAdamite, of zinc, copper and aluminum, which compares in properties with the other alloys of copper and zinc with which we are familiar.

Here are some figures for comparison of cast iron and pure aluminum. No. 12 weighs .102; cast iron .261, pure aluminum .097. Magnesium alloys are much lighter than the pure aluminum, in some cases running in specific gravity about two points lighter. In tensile strength we have some tests of magnesium alloys which run more than 28,000, but this is not the average.

Copper aluminum alloys, of which No. 12 is the best example, average about 20,000 lbs. per sq. in. This figure is the result of many thousand tests; in fact, the average was a little higher, about 20,500 lbs., from several thousand test bars, which were cast in ordinary foundry practice. Copper and zinc alloys, as shown by Nos. 31, 63 and 101, vary slightly, running a little higher in tensile strength, the average of No. 31, taken from several hundred tests, being about 30,000 lbs. These figures show 20,000 lbs. for No. 12 and 30,000 lbs. for the No. 31; cast iron, for comparison, being about 32,000 lbs. Pure aluminum, of course, is not to be compared with these, because the tensile strength is only about 10,500 lbs.

We will consider the effect of the treatment of the metal. Castings are the weakest form of the alloys. If the alloys are rolled into sheets or rods or drawn into wire, the tensile strength is greatly increased, which accounts for some of the very high figures we see given for some of the new alloys that are exploited; that is, they will give you the tensile strength for a rolled sheet or for a drawn bar, which runs up, in some cases, to 50,000 or 60,000 lbs. Green sand castings, that is, test bars in green sand, average from 20,000 to 30,000 lbs., depending on the kind of alloy.

I have had some practical experience in the decrease in the strength of aluminum at very low temperatures. In Minneapolis, where we operated a number of trucks, we always expected a few broken transmission cases whenever the temperature dropped to 20 degrees below zero or lower. We did not have any trouble at ordinary temperatures. Of course, there were some rather extreme conditions in the way of snow and hard service; the trucks worked harder on cold days, when the teams were out of commission, than at other times. But the results seem to show that very low temperatures as well as high temperature affect seriously the strength of the alloys. I would like very much to hear the views of some of the members present on this point. So far as I know no tests have ever been made with aluminum test bars under low temperatures. It is rather hard to do.

Discussion

C. H. Taylor.—I would like to ask if there is not another factor of considerable importance, the rate of cooling the aluminum. In other words, it might be

ALUMINUM ALLOYS AND THEIR PROPERTIES

Alloyed with	Properties (Compared to No. 12)	% Al.	% Cu.	% Zn.	% Mn.	% Mg.	Sp. Gr.	Wt. Pounds Per Cu. In.	Tensile Strength	Melt. Pt. °F.	Trade Name	Notes
Iron Silicon Manganese Chromium	Hard Strong Brittle											
Cobalt Nickel Vanadium Tungsten Molybdenum Tin Antimony	Hard Melting Point too high Cost too much											
Silver Gold	Good Alloys Cost too much											
Magnesium	Light. Not uniform. Increase strength up to 10% Mg. Hot Short		5.0		.5	.5	2.77 2.5		28000 18000	1202 1200	Duralumin Magnalium	(E) (E)
Copper	Good Alloy	92	8				2.84	.102	20000		No. 12	(A) (C)
Zinc	Good Alloy											
Copper and Zinc	Good Alloys	82 81.5	3 3 1.75 2.5	15 15 30 19	.5		3.03 3.02 3.35 3.10	.109 .109 .121 .112	28500 30000 42000 33000		No. 31 No. 31 No. 63 No. 101	(A) (A) (A) (A) (D)
(?)			3.	25			3.30 3.12	.113	37500 44250	1040	Mc-Adamite	
For Comparison Cast Iron Pure Aluminum							7.2 7.2 2.68	.261 .097	32000 38000 10500	1216		(B)

(A) Poured at 1225° F.
(B) Poured at 1400° F.
(C) Average of several thousand tests 20500 lbs. per sq. in.
(D) Average of several hundred tests 33000 lbs. per sq. in.
(E) Can be increased by rolling to 40000 lbs. per sq. in.

affected by the thickness of the metal, and also by the quality of the mold itself; that is, the possible chilling of the metal in the mold.

C. E. Cox.—Some tests show that chilling the metal tends to increase the tensile strength of the test bar. In fact, casting in dies increases it in some cases 25 to 30 per cent., but I have never seen results of any tests which show that a little difference in the temperature of the sand or the moisture in the sand, would make any great difference in the strength of the castings.

C. H. Taylor.—I brought up the question because I understand that the McAdamite process is based very largely on the chilling of the metal in molds. I believe they use some kind of carborundum lining in the molds for the purpose of chilling. In several cases we overcame the difficulty of castings cracking by inserting iron chills in the molds.

J. P. Carritte.—Aluminum and its alloys is a very interesting study, particularly in its elements of uncertainty. The more experience one has had in handling it the more one realizes that there is much yet to learn regarding its possibilities. I have frequently seen a pot of metal properly alloyed, fluxed, stirred, cleaned and skimmed, drawn under pyrometer, poured into two similar molds side by side at the same heat and time and widely different results obtained in strength determinations from the test bars in the different molds—which is difficult to account for. To get the best results proper care and handling in the melting are really more important than the alloying.

Some general shop practice rules that are well to observe to get high value in castings are to use special graphite crucibles, as aluminum has a great affinity for iron and silicon; iron and metal skimmers should be avoided and all stirrers, pots and receptacles of the molten metal should be well chalked or rubbed with graphite.

When the metal gets to a medium cherry red (not too bright) 1300 degrees to 1400 degrees F. by pyrometer, it should be drawn and poured. If for any reason the heat must be held back briefly after it is ready, it should be covered with broken charcoal to prevent oxidation.

When ready to draw flux well with sal-ammoniac or chloride of zinc (½ oz. up to 25-lb. heat and 1 oz. up to 80-lb. heat); get well down to bottom of crucible, stir and mix thoroughly, skim, draw and pour immediately, first clearing top of metal from any dross or dirt —with hardwood stick preferred.

Great care should be exercised in the use of scrap; use only the gates, sprues, defective and broken castings (never use turnings, filings, etc., which take up iron from the tools, which is hurtful to the metal). On account of the extreme light weight it is necessary to make larger gates and sprues in order to have the hot metal run properly; the percentage, therefore, of this class of clean scrap in the regular casting process is greater than that of heavier metals.

The metal will run up better, making more solid castings, with large gates from the bottom, avoiding blow-holes, carrying any air and dirt to the top risers.

Metal should not be left in crucibles under heat; always empty the crucible unless another heat is to be made in same immediately when 4 or 5 lbs. may be left in pot to start the next heat.

Have as little metal left over from casting requirements as possible—gates, ingots, etc., etc. Every time aluminum is remelted it becomes more brittle.

Any sharp corners in patterns (in molding), fillet and heavy lugs or blocks of metal in connection with thin sections should be well chilled, which will help prevent cracks and shrinks.

The strengths obtained in McAdamite castings are due to not only the alloy, but more largely the handling of the hot metal in the casting or molding process —by the very rapid extraction of the heat, creating a dense, close-grained and homogeneous metal; the slight excess in weight being, therefore, more than offset in value by the strength and toughness. A molding composition of carborundum, carbon, French clay, charcoal, etc., is used, in the same manner as in ordinary sand practice. The same results from quick chilling would be accomplished by pouring into iron molds, which would involve, however, greatly increased expense and be otherwise impracticable through the heating up of a metal mold on the first pour, thereafter losing the necessary quality of rapid heat extraction.

In many quarters there is a strong opposition to aluminum-zinc alloys, while many eminent metallurgical authorities insist upon their superiority. I think it is largely a question of prejudice, resulting from our different schools, surroundings and associations. Our experience is strongly in favor of the superiority of a proper zinc element and our several standard alloys contain from 6 to 27 per cent.

Harry Goldberg.—I would like to ask Mr. Carritte the composition of that test bar that showed 44,000 lbs.

J. P. Carritte.—That is about 75 per cent. of aluminum, 4 per cent. copper and the balance is spelter, with about 1 per cent. of nickel.

Harry Goldberg.—I have had some experience with alloying 25 per cent. zinc and 3 per cent. copper. We found the tensile strength about 37,000 lbs. The only trouble with metal of that composition is that it is very brittle.

J. P. Carritte.—It is very stiff; fractures similarly to steel, and has very little elongation.

Harry Goldberg.—Two-tenths of 1 per cent. elongation. There are other zinc aluminum alloys that have various degrees of elongation. As you increase the strength you decrease the elongation. A slight elongation is necessary in automobile practice because the metal has to withstand the jar.

J. P. Carritte.—It is very similar to any metal in that respect. The higher tensile strength you get the less ductile the metal is, except in the case of some special steels.

Harry Goldberg.—I presume the pouring temperature is about as low as consistent.

J. P. Carritte.—Of course, pouring temperature is governed largely by the size and nature of the pattern, but the lower you can pour the metal the better results obtained.

Harry Goldberg.—I verify Mr. Carritte's experience regarding the relation between the thickness of patterns and pouring temperature. From Mr. Cox's table it will be seen that aluminum alloys should be poured around 1225 degrees to get the best results. As a matter of fact, with most patterns you cannot go as low as that. I have just been down to Buffalo and seen some castings for the Pierce-Arrow Company, 3-32 of an in. in thickness. Those you have to pour around 1600 degrees. That does not mean, at all, that you get low results, because the sand chills the metal very rapidly and you get much more strength than you would imagine from hearing Mr. Cox's paper read.

I question whether re-heating aluminum makes the metal brittle. I have records of thousands of test bars, in which we used scrap in various amounts. We also melt iron pots and find no bad effects whatever in case not very much scrap is used. According to the S. A. E. specifications for No. 12, 1.7 per cent. of impurities is allowed, of which not more than 0.2 per cent. shall be zinc and the rest carbon, silicon and manganese; that gives a range in the iron content. Of course, too much iron makes the alloy brittle. I also think it is not necessary to melt with charcoal covering, because, as is pretty well known, aluminum oxidizes very readily; even with a charcoal covering the aluminum would take up the oxygen more readily than the carbon. It seems to me it is just going to expense and extra labor to use that charcoal. You also have to skin very clean to prevent charcoal from getting into the metal. The results of 44,000 lbs. tensile strength for the alloy, Mr. Carritte mentioned, I think cannot be compared with the other results that Mr. Cox gave from test bars cast in green sand, because, as Mr. Carritte said, you would likely get more rapid chilling in the first case.

J. P. Carritte.—Our experience is that when the aluminum comes to heat it should be drawn at once. If, for any reasons the molds are not ready, in the hurry of shop practice the heat is held back, we find that covering with rough charcoal prevents oxidization and we get better results in the pouring. I think it is a well-established foundry practice, in aluminum experience, that the less scrap you can use the better castings you will get. It is undoubtedly a fact

that every time the metal is reheated or cooked it becomes less valuable and has less strength, and becomes more brittle.

Harry Goldberg.—In that connection I have just about completed a series of experiments in melting with oxidizing and reducing flames. I will fully agree with Mr. Carritte that re-melting injures the metal if it is melted in an oxidizing flame. If you melt it in a reducing flame it does not seem to make any difference how many times you re-melt it. As far as I know there is no difference between the strength of the metal in bars in which the metal was melted in a reducing flame or in oxidizing flame. The only difference is in foundry practice, where it comes to the liability of the casting to crack.

C. H. Taylor.—I think you brought up the point of S. A. E. specifications. I would like to ask whether, in your opinion, it is not more important to keep the silicon and iron down quite a good deal than it is to keep the zinc down, in No. 12 mixture? In other words, are not silicon and iron the greatest enemies we have in aluminum?

J. P. Carritte.—Absolutely.

Harry Goldberg.—They should be cut down more than the zinc, I think, although in view of the bad reputation of zinc alloys the S. A. E. committee, in making up that specification, tried to keep the zinc down as much as possible.

In view of the fact that the tests submitted by Mr. Cox show that zinc alloys are stronger, as long as no weakness shows up in the casting later in actual practice, I do not see why more zinc than that should not be allowed. Too much zinc in the No. 12 alloy will make it brittle. I think we had better set the S. A. E. laboratory at work to decide the merits of the zinc alloys. Zinc alloys are certainly stronger, and from Mr. Souther's results seem to stand up very well on vibratory and impact tests. It is simply a question of former results and actual tests and it would be a very good thing to have actual tests before we take any radical step.

J. P. Carritte.—We have found that the worst enemy of aluminum is the silicon and the iron; that it will even take up silicon out of a plate bar and the iron out of iron pots. We get very much better results by using a graphite-lined pot.

A Member.—Will it not take the silicon out of a silicon pot?

J. P. Carritte.—Yes, it will.

C. E. Cox.—Every one who has expressed himself seems to think that the aluminum-copper-zinc alloys are all right, but still the manufacturers are afraid of them. We want to find a method of demonstrating to the satisfaction of everyone concerned the relative merit of the two alloys.

Vice-Chairman Myers.—It may take a little time, but it should be done.

Contribution by Mr. Souther

Henry Souther.—I think that the broad statement that zinc and aluminum alloys are brittle is not warranted by the facts. The endurance tests that I made for the old A. L. A. M. Mechanical Branch indicate better endurance than the copper aluminum under exactly similar conditions. It is quite true that .35 zinc and .65 aluminum makes a brittle alloy. My own preference is about .81 aluminum, .15 zinc and .4 copper.

Flux

W. R. Anderson.—I would like to ask some of our foundry friends whether they use anything in the way of a scavenger? In steel plants they use it to eliminate blow-holes in the castings. They have been making tests for about a year in and around Detroit, in various foundries with an article which has not been named yet. I do not know the true properties of it, but they have been adding about 6 oz. to 100 lbs. Tests have been made in some of the well-known aluminum foundries in Detroit, for instance, in casting steering wheels. They have practically eliminated a very large percentage of loss from shrinkage cracks, porosity and other defects and have also shown quite an appreciable increase in the tensile strength. About a ton of this material was brought to Detroit for use during the tests in the past nine or ten months. Although I am not at liberty to mention the name of the foundry, I will read the body of a letter. It might be interesting to you.

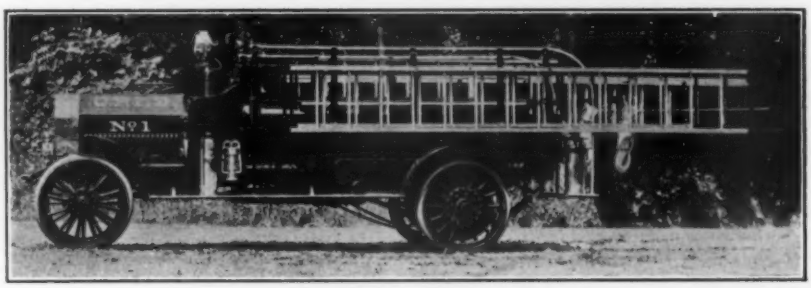
"We take pleasure in giving you the following report in regard to our experiments with your material. In our test was used 6 ozs. to 100 lbs. of aluminum, which produced the best results. Castings made from a mixture in these proportions are very smooth, free from holes and impurities and take a very high polish. We have learned through the Detroit Testing Laboratory that the test bars that were made containing your material showed that the tensile strength had been increased from 15,295 lbs. to 25,979 lbs."

As I understand it, there were several test bars made out of the same pouring, and they simply took some of the pots and introduced 6 ozs. of this to the 100 lbs. of aluminum in certain pots and left certain pots with identically the same mixture free of it. They then poured their test bars and with that result. He says: "Several tests have been made in our foundry by using your material in brass and the results so far have been say for us that your material used as a further report on this later. You may say for us that your material used as a flux is the greatest discovery ever made of which we know for aluminum foundry work." Another well-known company here in town that makes steering wheels says: "We have eliminated all of our past troubles with aluminum castings by the use of your material. This flux eliminated the small pin-holes in our steering-wheel castings." These were given to me for my consideration. I have seen some of the product. It has the appearance of a very fine granulated sugar and is a light brown color. The experiments have been carried on very quietly by some very competent engineers.

J. P. Carritte.—If we can get hold of something of that kind which will do away with blow-holes in our castings, life would be very much worth living. We have had things of that kind put up to us at different times and tried them. It is like aluminum solder. It will do everything but solder. We use sal ammoniac or chloride of zinc to flux and clean our metal and bring impurities out of it. The matter of eliminating blow-holes and cracks is very largely regulated by the heat at which you pour the casting and the manner in which you put on the gates and risers and get the air out.

W. R. Anderson.—I talked with one of the foundry men who has been experimenting with the material since last September. He says they are using it regularly now. They bought 500 lbs. of it after they found out what it was, at 20 cents a lb. It is claimed the loss in casting has been reduced by over 80 per cent. by the use of the material.

Harry Goldberg.—If the gentleman who is using this casts without the flux at 1600 and then with the flux casts at 1200, of course he will get a remarkable difference. I am very skeptical about the advisability of using such a flux. I would like to see it used. I would also like to know if you can tell the percentage of defects in the foundry practice of this gentleman before he started using this flux.



Avery Two-Ton Fire Truck

Used by the Centreport, L. I., Fire Department. It is a 50 h. p. Avery, capable of developing 40 m. p. h., with a crew of twenty men. There is space to mount a water pump on the transmission. A heavy chain is attached to the rear axle, for towing light hose cart.

Methods That Lead to Success in the Commercial Car Garage Business

By GEORGE L. WILLIAMS

IN connection with a state-wide distributing proposition a Pacific Coast dealer with a line of motor trucks has built a very good commercial car retail and garage business in one of the large coast cities.

He began business early, having foreseen the possibilities of the commercial car. He did not undertake the business as an experiment, but with the determination to build it up exactly as every other well-founded business is built up: by the exercise of insistent energy, the application of good common sense and an untiring perseverance in working out carefully laid plans.

His plans, however, were not all theoretical. They grew gradually with his business. They are based upon the keen observance of every little detail connected with the business of selling commercial cars and furnishing the proper service to owners.

He began in a small way, selling a well-known Detroit commercial car. From the first he decided absolutely upon two important planks which should be the mainstays in his business platform—one was that he should not cut his retail price on the car, and the second was that he should demand a legitimate recompense for every tap of garage work that he did which was not covered by guarantee.

These two planks, together with a square deal, prompt attention and courtesy to all, made up his business policy.

Having adopted his platform or policy, he did not sit down and wait for business to come his way. With the assistance of the factory he advertised judiciously, but he realized from the outset that advertising is only valuable when it is followed up by a co-operative sales plan. Selling commercial cars is a clean, hard business proposition, much the same as selling any other kind of machinery to hard headed business men.

He had the good sense to make a special and analytical study of the needs and requirements of various classes of business. He hired two or three real salesmen on a commission and drawing account and he gave each a definite class of business men to call upon, instead of dividing the district into territories as is usually done. Each salesman was armed with information gained by a careful study of the requirements of the class of business assigned to him. Nothing hit or miss or haphazard was allowed.

Our garage man early found that you cannot sell a commercial car on the first call or even on the second. In fact, it took six months to get some of those business men to even give their consent to a free demonstration.

A good many salesmen of commercial cars believe that a knowledge of the mathematics of the comparative merits of a commercial car, over an old-fashioned horse, is all that is needed to at least make a beginning.

Remember that your business man has figured this out theoretically for himself, or, more probably, with the assistance of your competing salesman. Your mathematics are an old story to him, but the salesman who calls upon him armed with a fairly accurate idea of the facts surrounding his actual business conditions and able to show what commercial cars have done for other people in the same line of business goes a step farther in the right direction.

Business was not very rosy at first. Expenses were high and sales were few, but this man was not easily discouraged. He made every car that he sold a selling asset. He exacted the last cent in payment for service rendered, but more exacting even than that was the promptness and the consideration with which he handled his garage business.

He never forgot the man who became a customer. He made it a point to call on each owner personally about a month or six weeks after the car was purchased and find out just how he was using it.

He gave many little hints and suggestions such as an expert can give to a new owner, which may even go so far as to decide whether or not that owner's experience with a car will be satisfactory.

Satisfied customers do not "just happen"—and, furthermore, the very best machine in the world will not make a satisfied customer unless that customer understands and operates that machine with reasonable care and attention.

Our garage man realized this fact and he made it his business to see that every owner was at least given an opportunity to know whether or not the machine he owned was getting the proper care and attention.

This garageman's success has been largely due to the character of the employes he hires. So again we find it proven that a company is known by the men it keeps. Every employe in this garage was courteous and considerate and usually wore an unerasable smile, and it takes a pretty good man to smile in the face of some kinds of kicks now and then. The men were made to remember the simple fact that it takes two to make a quarrel. Let an employee smile and, above all, keep his temper and feel in his own mind that he will be backed up by the boss in anything fair and reasonable and you will soon have a reputation for giving the best service of any garage in town.

What is Service?

Promptness, courtesy, cheerfulness and self respect are nine-tenths of service. The other tenth is taking a man's car and fixing it up as promptly as possible in consideration of the rights of others and rendering a man a reasonable bill for it in plenty of time for him to pay it the tenth of the next month following, or, if his credit isn't good, firmly but cheerfully insisting that the terms are C. O. D.

A crisp, snappy, business-like manner of handling customers has made more successes in business than a large bank account.

This western garage man has a regular way of doing everything and every employee knows that he is expected to follow that way in all his dealings with the public. There is no hesitation, no ifs or buts—every man knows exactly what he can do and what he can not do and he doesn't have to see the boss always for the final word. This man's business methods inspire confidence in every customer that comes into his garage and that's why the customer comes back and that's why he recommends him to his friends.

A business built on these plans must grow and this man actually outgrew his original quarters, and during the process, be it said, his prosperity was such that he could put up a building of his own in the very latest style and this is what he did.

But, in planning his new garage, all his thoughts were not turned to showroom space and display values. He felt a deep sense of gratitude to the workmen who had made his success possible. He provided for them in his new building—

First—A well-lighted, well-ventilated repair room of ample space.

Second—Instead of spending all his money for showroom decorations, he bought a complete set of tools and facilities for handling all kinds of ordinary garage work to the best advantage.

This garage man to-day covers three States—in addition to his headquarters in the metropolis of his State, he has a branch house in the metropolis of another State. His business is founded as securely as a bank, and, be it said, that the rules and regulations which govern his business are adhered to with the same faithfulness. He has made the selling of commercial cars as staple a business as the selling of any other kind of merchandise.

Motor Trucks Open New Territory for Laundries

Trucks Prove Profitable in This Line of Business
Light-Weight Machines Are Mostly Used

MOTOR cars of the light-weight type are favored by laundry concerns as the most practical size to use, as the packages carried are, as a rule, bulky, but of light weight. The cars are all fitted with pneumatic tires, and bodies are of generous proportions. A number of concerns that cater especially to the hotel trade use larger trucks, due to the fact that in this particular line heavy bulky bundles are transported. This applies also to concerns making a specialty of overall work, shop aprons, etc.

Most of the work done by the trucks in laundry service is in the suburbs, in some instances door deliveries being made, while in other cases the trucks are used for collection in out-of-town places within a radius of 20 to 30 miles from the concern's plant. These small towns sometimes have no laundries at all, and in many cases the little establishments they do have do not have facilities for doing high-grade work.

As is generally known the large laundries usually cater to what is termed the "bobtail trade," which means that the party running the bobtail laundry has no machinery of his own with which to do the work, but simply has a horse and wagon or a small store, all work actually being done by one of the large establishments. The motor truck has opened a new field for the bobtailer, in that in many of these out-of-town places where no laundries exist a profitable business can be established, and if the work is given to a laundry that uses a truck the work can be carried on under practically the same conditions as if the "bobtail" were located in the city.

Some of the large laundries have branches in various adjacent towns, and keep up a regular scheduled truck service between these branches.

The Quaker City Laundry

This is one of the most progressive Philadelphia concerns which, about four years ago, installed a commercial car to deliver its goods. The initial machine was an experiment, but within a few months it was found to be more than paying its way—first, in advertising value, and second, it opened a new radius

Fords Which Displaced a Number of Horses

Some of the Cars Used by the Quaker City Laundry

of business which was hitherto inaccessible with the horse delivery. This concern at the present day operates five vehicles, all of which are being used for suburban work.

Builds Garage for Forty Cars

With a view toward the future, this company built a garage capable of holding forty cars; thus in advance have plans been laid for an expansion which the proprietor feels to be a certainty. The garage is 110 x 50 ft. in size, and is arranged for straight line action. The autos back up and take on their loads from chutes. System is the password in this garage, and it is run just as systematically as if it were a public service station. In speaking of the garage, the proprietor said: "We get our gasoline at garage rates, and we charge to each driver all the gasoline and lubricating oil he consumes, as well as all the parts that may be needed for repairs on his machine.

"Before a man can get any supplies he must sign a ticket. A record is kept of all these. Every incidental expense, even such as supper charges when a car

is compelled to work overtime, is charged against the car. In this manner we are enabled to tell just what outlay we are making for the expenses and upkeep of all the cars in our service.

"Here is a typical month, September," and to verify his facts the speaker turned to his ledger, in which is kept the account for the trucks. "The total cost for one of our trucks for the twenty-six work days was $37.41, which includes everything except the wages of the driver. This is charged otherwise. For this $37.41 the car gave us a total of 1560 miles, which is at the rate of almost exactly 2½ cents per mile actual running expense. No allowance is made here for depreciation, as it was our purpose to know just the amount of money taken out of our cash box monthly to operate each truck.

"Naturally, on some months we do not make as good a showing as this. Sometimes repairs come that will adversely affect the record for some thirty-day interval, but summing up by the year, there is no doubt in my mind that trucks, in addition to giving infinitely better service and permitting the extension of business, also effect an economy."

Cartercar and Ford Used by Initial Towel Supply Company
The white-bodied machine takes care of small-bundle deliveries, while the Ford is used for special rush jobs

Brings Profitable Trade

In speaking of the advantages gained by the use of trucks the proprietor stated that all of the business so far acquired has proved very profitable, for the customers that were gained are in many instances well-to-do suburban residents who are not anxious about the cost, provided they can get the right kind of work.

The machines are able to make an average of 60 miles daily, and some days as many as 75 miles are covered. This concern used to pay as high as $250 for its horses, $250 for its wagons, and $50 for a set of harness, a total outlay of $550 for every team put on the road. One of the trucks puts out of commission three teams, representing a direct investment value of $1650. One truck really does more work than the three teams it displaces, for the reason that a large part of the delivery work allotted to the motor truck the horses could not do under any conditions. To the cost of the horse-drawn teams must also be added the salary of the three drivers who are displaced when one truck is able to do the work of three teams. This company has found out enough in its four years of experience with trucks to convince it that if its business is to grow it will have to look to motor trucks as the future medium of delivery, not only for distance work, but for all its work.

Grabowsky Used by Initial Towel Supply Company
This machine does all of the heavy work

Cars Kept Busy All Day

The cars are constantly on the go, all the engines being started at 6.30 in the morning and are never stopped until 7 in the evening. The management figures that it is better for the car to avoid the constant stopping of the engine and cranking to start it up again, and are willing to stand the slight expense of gasoline consumed. Five gal. a day is the average gasoline consumption for one of these cars. The drivers are men who were taken from the wagons. This concern never hires professional chauffeurs, but prefers its own men who, they say, are anxious to get the automobile routes, which are a promotion, and permit the men to do more work and make more money. Their drivers have to be salesmen and solicitors, and they take care of the customers, get new trade, and look after the collections and adjust various differences. This company claims it can make good laundrymen into chauffeurs, but that it is hard to make a laundryman out of a professional chauffeur.

Troy Laundry Uses Fords

The Troy Laundry, another well-known Philadelphia concern, is very enthusiastic regarding the performance of its two Ford cars. Each of these cars dis-

places three horses and two wagons, and do nothing but suburban work delivering laundry direct to the residences. The speed at which these little vehicles travel is responsible for the good showing they are making, the cars being kept busy from 7 A. M. in the morning until 5 P. M. at night. Each car covers on an average of 50 miles a day. The upkeep cost is said to be very low, and the remarkable saving that these cars have shown for this company is directly responsible for its intention of placing additional cars in service in the future.

Tire Equipment Given Special Attention

As a safeguard and for the purpose of eliminating undue delays in conjunction with tire punctures or blowouts, the policy is strictly adhered to of always keeping a reserve tire and an inner tube on each car. These are kept under lock and key, and can only be removed from their compartment by the driver himself when necessity demands. Another feature regarding tire equipment is interesting, in that the rear wheels are shod with 4-in. tires instead of 3½-in. which are furnished as standard equipment. The front wheels, however, retain the 3½-in. tires. It is claimed that the extra sized tires in the rear, which, by the way, are non-skid tires, permit of faster driving and of less wear and tear on the machines. This company also finds that the commercial car has opened up a new territory which would have been absolutely impossible to cover with horses.

The Initial Towl Supply Company

The Initial Towel Supply Company finds the motor truck to be indispensable, and for its purpose uses a 2-ton Grabowsky, one Cartercar and one Ford. This concern makes a specialty of laundering table linen, towels, etc., and caters chiefly to hotel trade. The Grabowsky truck is fitted with an immense body which causes much comment, and is in itself a great advertisement. This 2-ton machine does all the heavy hauling, carrying heavy bundles of towels, napkins, bedsheets, etc., and makes about five or six trips a day to the various hotels in the city.

The Cartercar is used mainly to haul smaller bundles of towels, while the Ford is used for special work which is desired in a hurry. The smaller cars are used principally for runs covering five to ten squares between stops. Each of the cars replaces two wagons. No trouble of any kind has been experienced as regards the running of the trucks, every one of them being in constant use for the past two years with only minor repairs being necessary. Much of this is due to the fact that this company garages the cars itself and all repairs are taken care of by an all-around mechanic who also takes care of the laundry machines. The cars are constantly looked after, and any possible breakdowns are thereby avoided.

Excelsior Laundry Uses Autocar

The Excelsior Laundry, 19th & Montgomery Ave., Philadelphia, uses its Autocar chiefly for relay work in suburban territory. The car displaces two teams and is considered a great time saver

Southern Concern Uses a White

The Home Laundry Company, of Louisville, Ky., has kept close tab on its delivery expense and figures that it is making a decided saving with its White truck, supplanting four horses and two wagons. The upkeep cost is $1960 a year, $600 of which goes for tires and $1040 for drivers' wages. These figures, however, do not include depreciation, which at 25 per cent. would add $650 a year, making the total upkeep cost $2540. The maintenance expense of the equipment displaced amounted to $2120 a year, not including depreciation. This factor would make the total cost of the supplanted equipment somewhat less than the cost of the truck, but the results secured from the latter are so much better that the delivery cost per package is greatly reduced. In making 28 miles a day the truck makes 250 stops, which is equivalent to 10,000 miles a year, or 90,000 stops. The desirability of the machine is particularly appreciated in view of the growth of the city which has increased the territory of the laundry by 100 per cent. in five years.

White Used by Louisville, Ky., Laundry

This truck supplanted four horses and two wagons

(For additional experiences among the laundry trade, see page 55.)

Stewart 1914 One-Ton Truck

Five styles of bodies on the one chassis constitute the 1914 line of trucks, manufactured by the Stewart Iron Works Company, of Cincinnati, O. With either standard stake or express body the truck sells at $1150; with wire top body, at $1250; with panel top body at $1350 and $1425. Loading capacity is one ton.

The Motor

This car is powered by a 25 h. p., two-cylinder, 5 x 5½ in. opposed motor. Crank shaft, connecting rods and cam shaft are drop forged from 30-40 point carbon steel. Main bearings on crank shaft are 1⅝ in. diameter by 2¼ in. long, connecting rod bearings 1⅝ in. diameter by 2⅛ in. long. Bearings are made of Die Cast White Bronze, and are interchangeable. The one-piece crank case is grey iron, accessible by removing oil case to connecting rods and main bearings.

The motor is lubricated with a gravity oiler, which is automatic and positive; oil is fed into the cylinders and wiped from cylinder to crank case, from where bearings are oiled by splash. Ignition is accomplished by means of a dual system of high tension magneto with distributor and dry cells operated through a switch in coil which is located on dash. Carburetor is an automatic float feed type, with one adjustment.

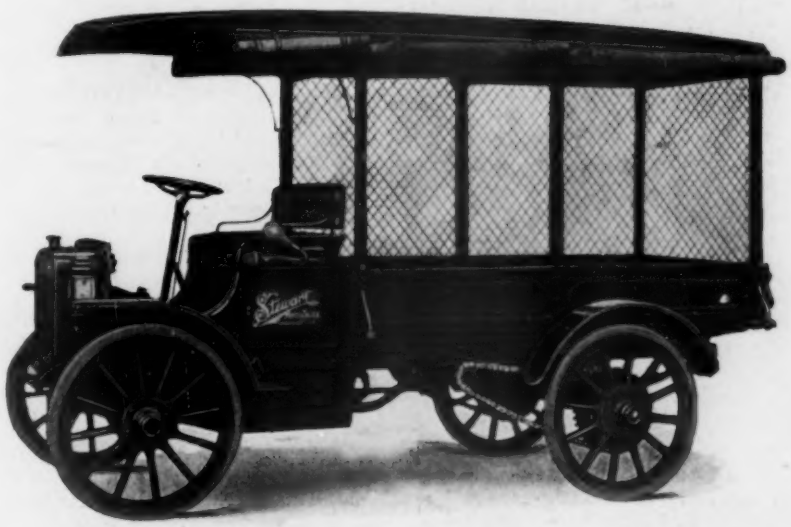
Clutch and Transmission

Clutch is multiple disc, enclosed in a separate oil-tight compartment of transmission case. The transmission is planetary. Gears are 1⅜ in. face, 6-8 pitch heat treated nickel steel, giving two speeds forward and reverse. Forward speeds are operated by hand center control lever; reverse is operated by a foot pedal. Maximum speed is 18 m. p. h.

Drive

Differential and jack shaft are a unit and are made of the best bevel gear type, mounted on Hyatt roller bearings; contain two Vanadium steel drive shafts which drive side sprockets with 1¼ in. pitch Baldwin roller chains to rear wheel sprockets. Front axle is tubular type; is built up of 30 to 40-point carbon steel dropped forged steel ends and steering knuckles, 2¼ in. in diameter. Rear axle is built up of 30 to 40-point carbon steel, dropped forged steel ends, 2½ in. solid.

Stewart Truck With Standard Express Body
Either this or standard stake body jobs, sell at $1150



Stewart One-Ton Wire-Top Job
Two cylinder opposed; 25 h. p.; planetary transmission; $1250

Wheels, Brakes and Springs

Wheels are 36 in., second growth hickory, with twelve 2 in. oval spokes in rear and twelve 1¾ in. oval spokes in front; these wheels are mounted on Timken roller bearings, which have a guaranteed carrying capacity of 7640 lbs. The service brake has 16 in. diameter and 2 in. face, is actuated by a foot pedal and operates externally on a drum on rear wheel hubs. Emergency brake is 10 in. diameter and 2 in. face, actuated by a foot pedal and operated externally on the drum of the jack shaft.

Springs are semi-elliptic, 2 in. wide in front and 2½ in. in rear, ten leaves each, made of vanadium steel.

Regular tire equipment is solid clincher, 3 x 36 in., guaranteed for 8000 miles. Pneumatic tires, 34 x 4½ in., can be had at a small additional cost. Standard equipment is three oil lamps, tool kit, oil can and bulb horn. Extra equipment is Prest-O-Lite tank, $25; tire chains, $6; swivel searchlight, $15; carbide generator, $5; extra top for driver's seat on open bodies, $40; speedometer or odometer, $25.

Gasoline tank is of 11 gal. capacity. Frame is channel steel, reinforced with cross beams. Wheel base is 96 in.; tread, 58 in. Standard colors are royal blue, with cream running gears and trimmings or maroon with red running gears and black trimmings.

Autocar Changes and Improvements

THE Autocar Company, of Ardmore, Pa., has consistently confined itself to the manufacture of but one model of commercial vehicle, and the latest model, 3000 lb. Autocar, now being shown at the various branches and agencies, shows what can be accomplished by specializing on one type of vehicle.

This company began the manufacture of this type of vehicle in 1907. The engineering department formulated the following policy, which has been followed since that time:

First:—The capacity was fixed at 3000 lbs., as experience indicated this to be the size which would cover to the best advantage the requirements of a delivery vehicle.

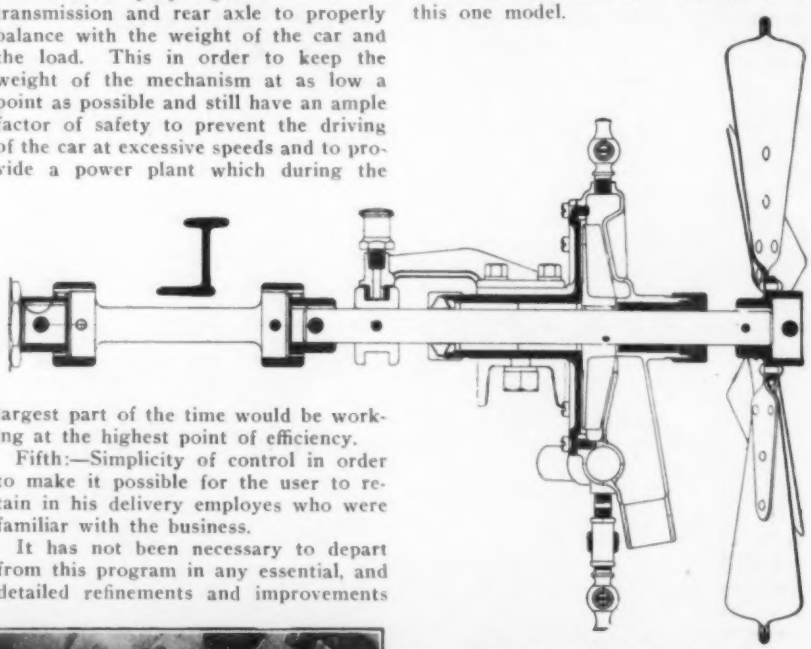
Second:—A compact arrangement of parts, which would give a loading platform of maximum capacity on a short chassis without undue overhang; the advantages derived from this construction being ease of operation in traffic and narrow streets, saving of unnecessary weight in the frame parts, and equal distribution of load on tires.

Third:—Accessibility to all parts of the vehicle mechanism needing attention in the way of adjustment, repair or lubrication.

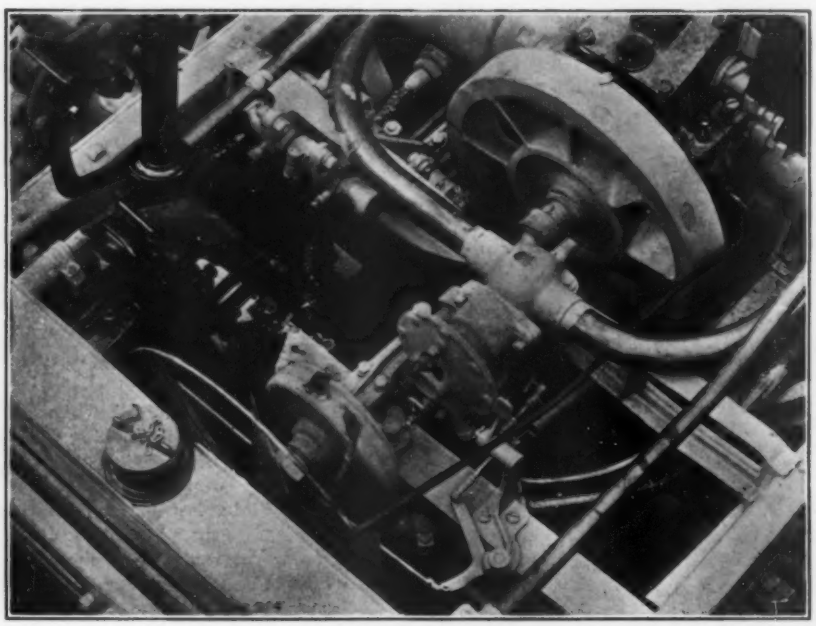
Fourth:—Moderate power in connection with the proper gear ratios in the transmission and rear axle to properly balance with the weight of the car and the load. This in order to keep the weight of the mechanism at as low a point as possible and still have an ample factor of safety to prevent the driving of the car at excessive speeds and to provide a power plant which during the largest part of the time would be working at the highest point of efficiency.

Fifth:—Simplicity of control in order to make it possible for the user to retain in his delivery employes who were familiar with the business.

It has not been necessary to depart from this program in any essential, and detailed refinements and improvements which make the car more nearly conform to the above policy have been suggested by this company's long experience with users and in the manufacture of this one model.



The Pump Has been Moved
It is now in line with the crank shaft and driven directly from it



View of New Autocar Control
By combining brackets and levers the control mechanism has been simplified

The most important change in the new model is in the rear axle.

The Autocar Company was the pioneer in the use of shaft drive in pleasure cars in America, exhibiting the first model in 1903. It was also the pioneer in this country in adopting the shaft drive to a car built purely for commercial use.

The axle used is the compound bevel and spur gear type, patented by the Autocar Company.

As will be seen by the illustration the load is carried on the axle housing, which consists of two malleable iron castings bolted together midway between the wheels. The outer ends of the housing are supported on Timken bearings in the wheels.

Referring again to the illustration the power is transmitted from the motor through the usual clutch and three speed sliding transmission to the bevel pinion, thence to the bevel gear which is integral with the spur pinion, to the spur gear, which is riveted to the differential.

The differential is of the bevel gear type of greatly increased size, all parts being 3½ per cent. nickel steel, case hardened, with all bearing surfaces ground.

All the gears are carried on the front cover of the axle on large Timken bearings, and can be removed as a unit without disturbing the axle housing proper. Access for inspection of the gears and adjustment of the bearings is provided for by the removable rear cover.

The gear ratio has been changed from 6:1 to 7.1:1, thus reducing the speed of the car 18 per cent. and increasing the effective pulling power by the same amount.

In spite of the great increase in strength afforded by these changes the weight of the axle has only been increased 25 lbs. over the former model.

The next change in order of importance is the tire equipment, which has been changed from 34 x 3½ front and 34 x 4 rear to 34 x 4 front and 34 x 5 rear, thus insuring low tire maintenance charges by reason of the perfect load distribution and the oversized tires.

On the former models the water pump was mounted under the floor boards ahead of the motor and was driven by gears from the motor crank shaft.

The pump has been moved so as to be in line with the crank shaft and is driven direct from the motor through a universal joint.

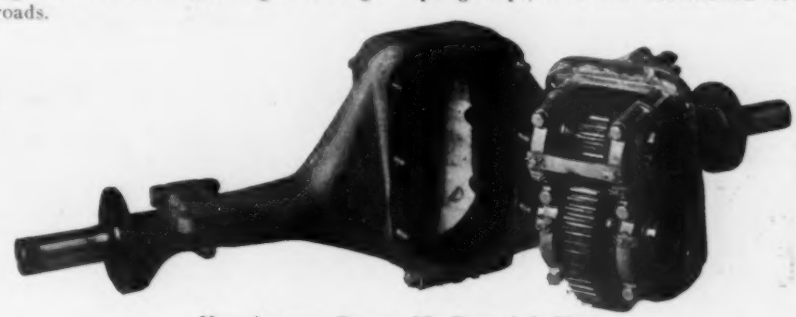
The pump is mounted on a rugged channel iron cross member independent of any other part of the chassis so as to relieve it of any stress due to weaving when the car is traveling over rough roads.

An extension of the pump shaft carries a large fan back of the radiator which accelerates the air passing through the radiator and increases the efficiency of the cooling system, thus rendering the car capable of operation in rough, hilly country.

The arrangement of the pump with an outboard thrust bearing, which takes care of the thrust of the fan and pump paddle together with the fan and universal drive, is shown in the accompanying illustration.

Minor refinements, which are, however, no less important to the user, are the simplicity of the control mechanism, the increased size and special design of spring clips, and the substitution for leather packing under the springs of metal packing pieces accurately fitted.

The Autocar Company has stood as a pioneer in the education of the user in regard to trucks, this close touch with the user resulting from this policy being undoubtedly accountable for the numerous detailed refinements which have made this car popular.



New Autocar Removable Rear Axle Unit

Martin Commercial Cars in Three Models

FOR 1914 the line of trucks built by the Martin Carriage Works, York, Pa., will consist of three models—Model S, with a carrying capacity of from 2500 to 3000 lbs.; Model E, with a carrying capacity of from 4000 to 5000 lbs., and Model L, with a carrying capacity of from 6000 to 8000 lbs. On all models the buffer is built in with frame and shaped to form a brace and a protection for the radiator. Chasses and driver's seat are furnished in lead. The driver's seat in each is furnished with full storm front and sides. Any style of body is built to order at an extra charge.

Model S

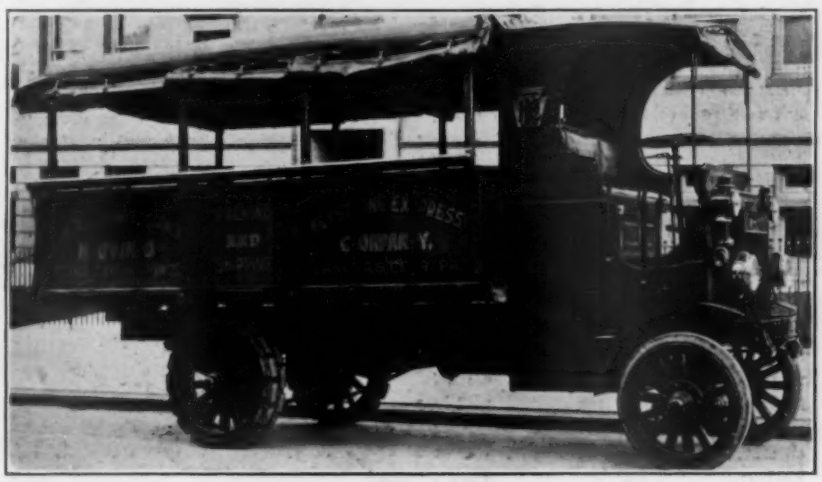
This, the smallest model, is powered with a four-cylinder, four-cycle, water-cooled motor. It is a Wisconsin type E, cast en bloc, with a 4-in. bore and a 5-in. stroke, developing 30 h. p. All valves are enclosed, making them dust-proof. All crankshaft bearings are 1¾ in. in diameter; the rear bearing is 4 in. long. Connecting rod is 10½ in. long; its bearings are 2¼ in. long. Piston pin is 1 3-16 in. in diameter. The camshaft is 15-16 in. in diameter; the front and center bearings are 2¼ in. long. Valves are 1 11-16 in. in diameter.

Water is circulated by means of a centrifugal pump through the circulation system and special heavy type cushion-suspended radiator, which is extra large to secure easy cooling at all times. A ball-bearing fan is mounted as an auxiliary. The gasoline tank, of 16 gal. capacity, is built into the back of the seat; from there the flow is by gravity to the carburetor. Oil is pumped by means of a gear pump to the main bearings, through a hollow crank shaft to connecting rod bearings with a constant stream over each bearing when the motor is running. An oil gage is located on the exhaust side of the motor.

Clutch, Transmission and Drive

The clutch is a heavy multiple disc type. The transmission is a Brown-Lipe sliding type, equipped throughout with Timken bearings. The transmission is a unit with the jackshaft.

The jackshaft is Timken. From it the drive is by side chains to the rear



Martin Model L Truck

Four-cylinder 45 h. p. motor; wheelbase, 145 in.; capacity, 4 tons

wheels. Sprockets are machined cut and hardened, 1¼ in. pitch, ¾ in. roll and ⅝ in. face. Chains are highest quality roller bearing, Q. D. The rear axle is Timken, 1¾ x 3 in., with Timken roller bearings. Timken hubs and brakes also are used. The front axle is 2 x 2¾ in. Timken I-beam, with Timken roller bearings and spindles.

Wheels, Brakes and Springs

Wheels are second growth white hickory, with artillery hubs and extra large flanges. They are fitted with Goodyear 36 x 3½-in. front and 40 x 4-in. rear tires, which are demountable and guaranteed for 10,000 miles. Brakes are 16 in. diameter, 2¾-in. face, emergency brakes on rear wheel hubs, and service brakes on the jackshaft ends. All brakes are asbestos lined. Both springs are semi-elliptic with inner sleeve, case hardened spring bolts and grease cups. Front springs are 2¼ x 42 in.; rear springs are 2½ x 48 in.

Martin Model E Truck
Capacity, 2½ tons; four-cylinder 35 h. p. motor; wheelbase, 135 in.

Other Details

The frame is heavy steel, reinforced with wood insert. Spring hangers are crucible steel castings. A Ross irreversible steering gear is used. Regular equipment is three oil lamps, horn and tools. Compression grease cups are used where necessary and practical. Wheelbase is 121 in.; tread 60 in. front and 61 in. rear. Rated capacity is from 2500 to 3000 lbs.

Martin Model S Truck
Capacity, 1½ tons; Wheelbase, 121 in.; tread, 61 in.; four-cylinder 30 h. p. motor

Model E

The motor is a four-cylinder Wisconsin type B, 4½-in. bore and 5-in. stroke, of the T head type, and develops 35 h. p. The rear axle is Timken rectangular, 2¼ x 3⅝ in.; the front axle is Timken I-beam, 2¼ x 3⅜ in. Roller bearings are used on the spindles and on the knuckle head. Service brake on the jack shaft is 12⅜ x 2 in.; the emergency brake is 18 x 3½ in.

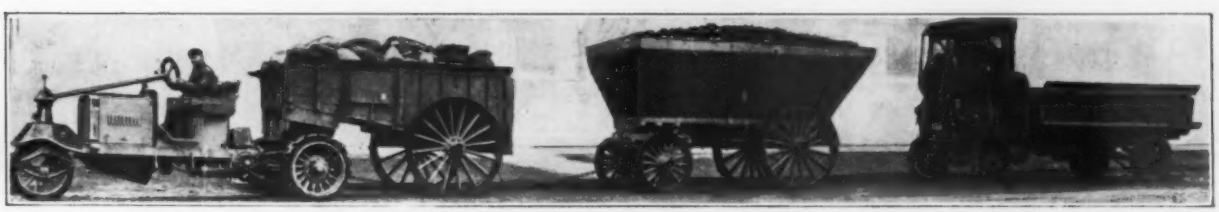
Springs

Springs are semi-elliptic, 42 x 2½ in. front and 50 x 2¾ in. rear. Tires are 36 x 4 in. front and 40 x 3½ in. dual rear. Rated capacity is from 4000 to 5000 lbs. Wheelbase is 135 in.; tread, 61 in. front and 65 in. rear. In other respects it is the same as Model S.

Model L

A four-cylinder Wisconsin type A motor is used. It is T head, 4¾-in. bore and 5-in. stroke, and develops 45 h. p. Rear axle is Timken rectangular, 2¾ x 4⅜ in. Front axle is Timken I-beam, 2½ x 4 in., with 2⅝-in. spindles.

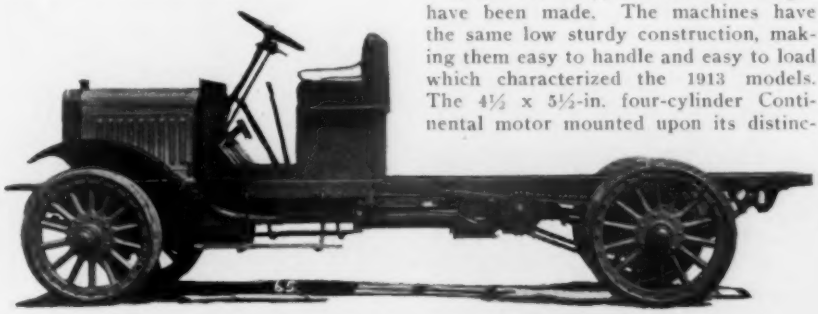
Springs are semi-elliptic, 3½ x 42 in. front and 3½ x 56 in. rear. Jackshaft service brakes are 14 x 2½ in. Rear wheel emergency brakes are 20 x 4 in. Rated capacity is 6000 to 8000 lbs. Wheel base is 145 in., tread 64 in. front and 70 in. rear. Otherwise this model is the same as Model E.



Knox-Martin Tractor Pulling Sixteen Tons
This load was taken up an eight per cent grade one-third mile long, on a bet between two of the company officials

New One-Ton B. A. Gramm Truck and Changes in Two and Three-Ton Models

The Gramm-Bernstein Company, manufacturers of B. A. Gramm's trucks, has announced its complete line for 1914. The 2 and 3½-ton trucks made in 1913 have been retained with some changes. A 1-ton was added a few months ago and is herewith described, and a 5-ton model is announced for delivery shortly. These trucks all follow very similar lines of construction and in the design of each model the same facts have been kept in mind, namely—to produce a truck especially suited for the particular demands placed upon a machine of that capacity. Features are numerous in each machine, but in all cases they are features which have proven their use warranted by severe trial and are based upon an experience of more than thirteen years in motor truck manufacture.



New B. A. Gramm One-Ton Chassis

Four-cylinder 3¾ x 5¼ in. Continental motor, three speeds forward and one reverse; wheelbase, 130 in.; length behind seat, 102 in.

The New Model

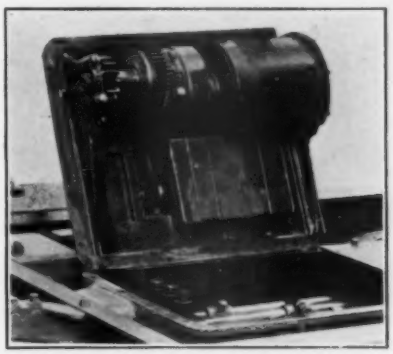
In this model the motor has been placed in front of the seat and under a hood. A four-cylinder 3¾ x 5¼ in. Continental motor is used. It is carried by means of an improved three-point suspension. The clutch is a Hartford cone type, while a three-speed forward and one reverse type of transmission is used. Final drive is by means of two roller type chains. The axles both front and rear are drop forged and are large and unusually strong for the capacity of the machine. The frame is of pressed steel. Two sets of powerful brakes are fitted, both acting on the rear wheels. Long sweeping springs are used, those in the rear being underslung so that the body of the truck will be low and easy to load and unload.

This machine has been equipped with left hand drive and center control, so that access is easy for the helper usually employed on a machine of this type, where the trips are usually short and the stops frequent. The general low construction of the entire machine and the accessibility of all parts of the body make it ideally adapted to this class of quick delivery work where fast handling and reduction of the stopping time is even more important than in the larger machines.

The machine comes fully equipped with every essential. A Schebler carburetor is used and a Bosch magneto. The length of the frame back of the seat is 102 in., allowing the use of 9 ft. 6 in. body with ease. The wheel base is 130 in., and 34 x 3½ in. tires are used in front and 36 x 4 in. in the rear, both of the solid type. The gasoline feed is by gravity from a tank carried under the seat. Any type of body will be built by the manufacturers to order.

Changes in Two and Three-Ton Models

In the 2 and 3½-ton but few changes have been made. The machines have the same low sturdy construction, making them easy to handle and easy to load which characterized the 1913 models. The 4½ x 5½-in. four-cylinder Continental motor mounted upon its distinctive spring supported sub-frame is retained, while the transmission of the dog clutch type is also continued as before without change. The service given by

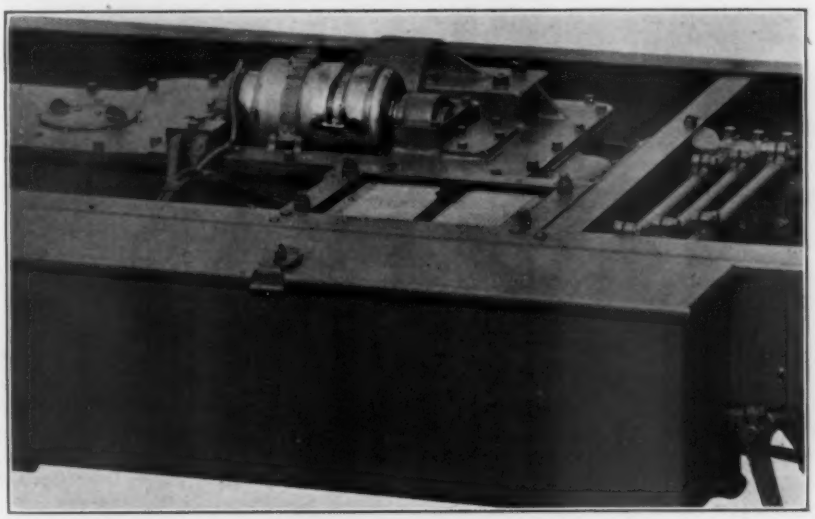


Inside of Transmission-Case Cover

This cover carries the starter and generator

this transmission has surpassed all expectations and has fully justified the faith of its builders in the construction. The same big high-grade springs are used. Their quality and their construction insures long life of both the machinery and the tires, as vibration is very much reduced.

An important change has been made in the method of mounting the self starter, a feature of B. A. Gramm's trucks. In place of mounting it on the engine base and turning the motor through the flywheel, both starting motor and generator are now mounted on the transmission cover. This method of mounting, it is claimed, has a number of

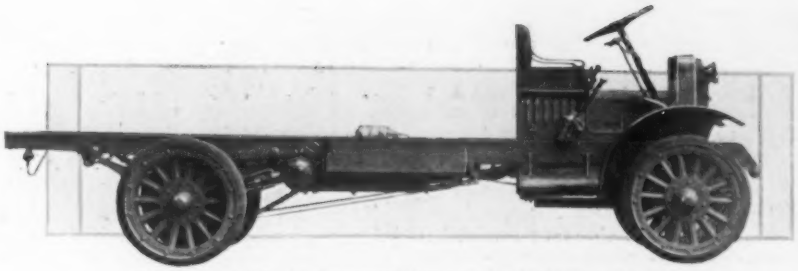


Top of Transmission Case

Showing method of mounting the generator and starter

important advantages. When the starting motor acts through the clutch, the clutch may be first slipped and then gradually dropped into place, thus the starting motor attains its full speed before it is called upon to turn the engine and the heavy current which the battery must supply is much reduced and the strain in the mechanism also reduced. Another feature with this method of mounting is that at no time while the truck is running is the generator idle. In hilly countries where it is of advantage to slow down the motor when going down long grades the generator is always turning and the battery is kept fully charged. No sliding gears of any character are used in the mounting of this starter. The generator is driven by a silent chain. It is felt that this method of mounting the starter possesses many important advantages for truck construction.

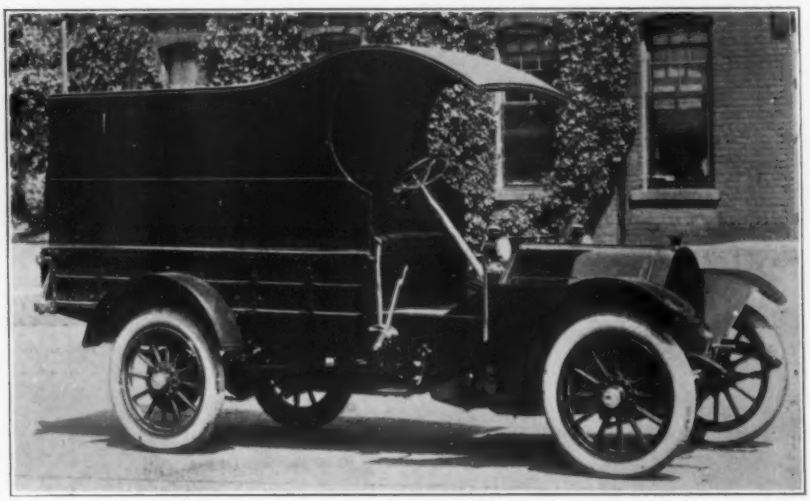
The starter is operated by the speed control lever, and the construction is such that it is impossible to engage the starter and one of the transmission dogs at the same time. With all the improvements in this construction and with the other features that are offered by the B. A. Gramm's trucks, the price has been retained as before, $2750 for the 2-ton model, and $3600 for the 3½-ton.



Side View of B. A. Gramm Three and a Half Ton Chassis
Length of frame behind seat, 12 ft.; wheelbase, 140 inch.; weight of chassis, 3 tons

Cleveland Truck Has Overhead Cam Shaft

The Cleveland truck is the result of its manufacturer's—the Lewis Spring & Axle Company, Jackson, Mich.—efforts to build a car heavy and strong enough to stand hard service and yet not too large or too heavy. It features an overhead cam shaft, which, the manufacturers claim, through eliminating push rods, open the valves fully and gives the cylinders a greater charge and more power. The capacity of the truck is 1500 lbs.



The Cleveland Truck
Capacity, 1500 lbs. Fitted with panel body, as above, $1325

The Motor

The car is powered by a four-cylinder, four-cycle motor, 4½-in. bore and 4½-stroke, with cylinders cast in pairs. The valves are contained in cages and are inclined at 45 degrees in the cylinder head. The above-mentioned overhead cam shaft is driven by enclosed shafts and gears. The crank shaft is of the five-bearing type. The thermo-syphon system of cooling is used. Ignition is effected by a low tension magneto and batteries. The carburetor is of the float feed type. The inlet pipe and the passages in the cylinder head are designed as straight as possible to afford easy passage for the gas. The motor, clutch and transmission are a unit and are lubricated by a single circulation system.

Clutch and Transmission

The clutch is of the multiple disc type. The transmission is selective sliding gear type, giving three speeds forward and reverse. Shafts are mounted on annular ball bearings of the separated ball type.

Axles

Drive from the transmission to the rear axle is by a straight line shaft. The rear axle has a bevel gear drive, with roller bearings next to the wheels and on either side of the differential and ball-thrust bearings. The front axle is of the I-beam type, with tie rod behind and steering arm above the axle.

Frame, Brakes and Springs

The frame is very wide and heavy, to prevent sagging and breaking. Both brakes operate on the rear wheels, one being of the expanding and the other the contracting type. Springs are semi-elliptic front and full elliptic rear.

Other Details

The wheelbase is 120 in.; the tread is 56 in., but 60 in. may be had on special order. The truck weighs 2600 lbs., and is fitted with 33 x 4½-in. pneumatic tires. Equipment includes three oil lamps, tools, pump, jack and horn. Fitted with open express body, the car sells at $1250, with panel body, as shown, $1325. Special bodies are furnished as desired. C. D. Paxson, Cleveland, O., is sales agent for the United States.

AMERICAN LA FRANCE FIRE APPARATUS WITH SLIDING GEAR

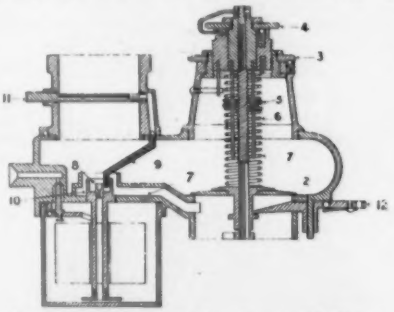
In the last issue of the Commercial Car Journal we stated in error that the fire apparatus of the American La France Fire Engine Company exhibited at the annual Convention and Exposition in New York was fitted with the Manly Drive. Their vehicles, we are informed, are either fitted with sliding gear transmission or gasoline-electric combinations.

THE WALLACE AUTOMATIC CARBURETOR

The carburetor illustrated here is manufactured by the Lucas-Wallace Manufacturing Company, of Paducah, Ky.

By reference to the cut, the operation of this carburetor can easily be seen. 1 is the spring controlling the auxiliary air valve 2. 3 is the low speed adjustment, which operates by increasing or diminishing the tension on the spring 1. 4 is the high speed adjustment which operates by increasing or diminishing the effective length of the spring 1. This is accomplished by screwing the plug 5 up or down on the threaded rod 6. This plug 5 is threaded externally and internally with threads of the same number to the inch and the spring 1 has the same number of convolutions to the inch. The plug 5 threads into the spring 1, and by raising or lowering this plug 5 on the rod 6 the effective length of the spring is increased or diminished. Decreasing the effective length of the spring, in effect, makes the spring stiffer and the mixture richer; while increasing the effective length of the spring, in effect, renders the spring less stiff and the mixture thinner.

This makes the adjustment of the carburetor extremely simple and accurate, as there are but two adjustments, one for high and one for low speed, and these adjustments are entirely independent of each other. 7 is the passage for fixed air. At low engine speed the gasoline is drawn up from the bowl through the orifice 10 and overflows into the bowl 8, from whence it is drawn through the small tube 9 and discharged into the mixture passage above the butterfly throttle valve 11. All of the gasoline drawn through the tube 9 is discharged into the very high vacuum above the throttle and is met by the high velocity stream of air flowing past the throttle at low speed and is thoroughly vaporized. Should any of this gasoline condense on the walls of the manifold, it



Sectional View of the Lucas-Wallace Carburetor

flows back to the throttle and is revaporized by the high velocity air steam at that point. The result is the perfect vaporizing of low grade gasoline at low speed. This perfect vaporization at low speeds is obtained, as will be seen, without using a high constriction on either the air or gasoline at low speeds. By reason of the fact that both are comparatively free it is unnecessary to resort to any mechanical device for increasing the gasoline opening on high speed, in order to keep the degree of the vacuum in the carburetor down. The vacuum in this carburetor is very low, as by reason of its construction it may be as low as desired. In practice it is found that about 1-3 lb. of vacuum to the square inch is all that is required. This extremely low vacuum eliminates to a very large extent back pressure on the engine, and enables the engine to develop increased power.

The following are some of the claims made for this carburetor: Ease and simplicity of adjustment, same mixture at all speeds, a very low vacuum, hot air and hot water connections unnecessary, even in coldest weather.

The "Milawa" Electric Tail Lamp
Made of a single piece of aluminum. Throws white light on license tag

NEW ELECTRIC TAIL LAMP

The "Milawa"—pronounced "mil-away"—is a new electric tail lamp of the torpedo pattern. It is very light in weight and has the fewest possible number of parts. Shell is a single aluminum casting, black enameled outside and white enameled inside. The lamp is so shaped that it forms a parabolic reflector opposite both glasses. It has red rear glass and an extra large semaphore white glass that throws a powerful light on the license number.

The manufacturers report a heavy demand for this lamp and claim that it was especially designed to comply with the new laws of many States which have recently passed laws regarding lights on the license numbers. The "Milawa" is furnished complete with Tungsten bulb in an Ediswan socket and a wire lead, and is manufactured by the Beckley Ralston Company, 157 N. Michigan Avenue, Chicago, Ill.

THE PILOT HORN—OPERATED BY HAND

The accompanying illustration shows an extremely simple hand-operated horn, known as the Pilot, and manufactured by the Nonpareil Horn Manufacturing Company, of 75 Wooster Street, New York City. The parts that are hidden under the neat, dome-shaped casing above the diaphragm are few and simple. The wheel that surmounts the dome is carried on a short spindle, the other end of which carries a bevel gear meshing with a bevel pinion. The pinion carries a toothed wheel which makes a contact with a steel button on the diaphragm in the usual way. It is obvious that by turning the wheel by hand gently or forcibly the tone and volume of the sound can be varied from minimum to maximum, and the blast emitted suited to the occasion.

The Pilot Horn
Operated by small hand wheel on top

THE STROMBERG GASOLINE STRAINER

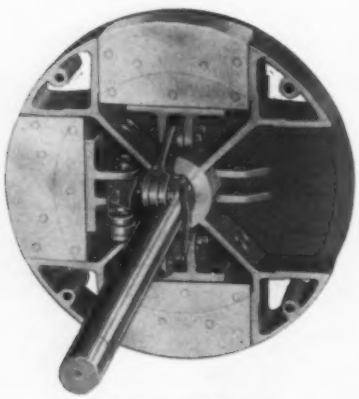
The Stromberg Motor Devices Company, Chicago, Ill., manufacturer of Stromberg carburetors, has placed on the market the gasoline strainer here illustrated. It is made of high-grade ma-

The Stromberg Gasoline Strainer
Arrows show direction of flow of gasoline through the strainer. Price, as illustrated, $2.50

terials and is simple in construction. The entering gasoline flows down through the vertical tube to the bottom of the bowl, where all heavy particles are deposited, when the gasoline rises and filters through a fine metal gauze, where the most minute foreign substance or drop of water is retained. The gasoline then flows through the outlet to the carburetor. When it becomes necessary to clean the strainer, the entire bowl can be removed by loosening the nut on the top. Partial cleaning can be secured by opening the drain cock on the bottom. This strainer with supporting arm, as illustrated, sells at $2.50; without the shutoff cock, at $2, and without either arm or shutoff cock, at $1.90.

A NEW CLUTCH

The Positive Clutch Company, 1345 Rawson Street, Chicago, Ill., is manufacturing the clutch here shown.



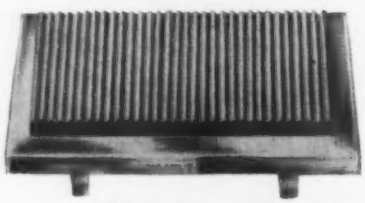
The Positive Clutch
This new clutch has four friction blocks which engage the flywheel

It has four shoes which expand in a rim flywheel. It is claimed to take up load softly and gently and to hold like a vise, and release quickly and freely. Oil, water or heat, it is said, will not affect it and friction blocks will outlast the life of the car. The clutch runs on ball bearings on crankshaft, and there is no overhanging weight on flywheel. A brake arm, which throws out cone to press down on brake rim of clutch to prevent it from revolving when released, can be put on the shaft, thereby saving the transmission gears from being battered and chewed up in changing of speeds.

PEDAL PADS FOR TRUCKS

The Auto Pedal Pad Company, Inc., of 794 7th Avenue, New York City, is making a specialty of rubber pedals for use on car pedals—for either the clutch or brake. These pedals are made to fit all makes of cars, and are moulded of solid pliable rubber. The upper surface has deep ribs which are claimed to insure a firm grip for the foot. The rubber is firmly secured in a metal frame which is attached to the pedal by metal

Ford Type, $1.50



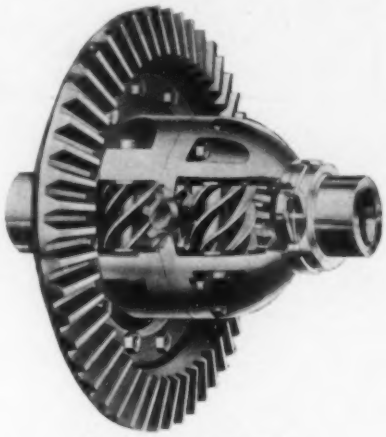
Pierce-Arrow, $2

prongs. It can be easily and quickly applied and removed by anyone. The illustration shows two styles—the Pierce-Arrow style, listing at $2 for a set, and the Ford, at $1.50.

NEW DIFFERENTIAL HAS SPIRAL GEARS

It is claimed that through the use of the spiral gears this differential affords a solid axle, when the car is being driven in a direct line, and that, when turning a corner or driving at an angle, both rear wheels drive the car in proportion to the distance traveled by each wheel. Thus if one wheel of a car equipped with this differential should fall into a hole, where it could not obtain traction, the power applied through the wheel, which had traction, would propel the car to a place where there would be traction for both wheels.

The differential has eight spiral gears, six of which are journaled in the housing, the other two being anchored on axle shafts. This housing is the same size as those regularly used and may be substituted for them. The manufacturer says that this could be done in an hour's



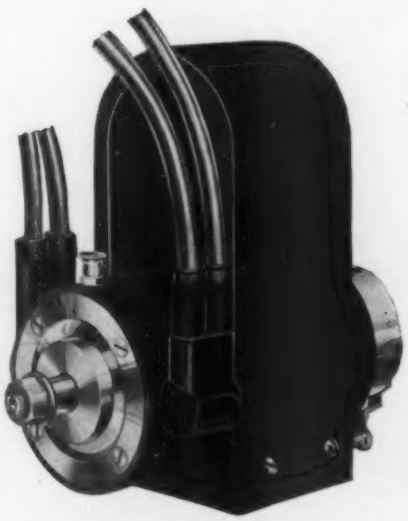
The M & S Differential
The spiral-gear construction permits both wheels to drive when turning corners

time on a full floating axle, other types requiring a little more time. In this substitution the master or ring gear of the original differential is retained.

This differential is being placed on the market by the M & S Gear Company, Dime Bank Building, Detroit, Mich.

A NEW MAGNETO

The Ericson Manufacturing Company, of Buffalo, N. Y., has brought out a new magneto, known as the Berling Type N, suitable for small trucks, delivery wagons, marine and stationary engines. It is of the high tension type and is water, oil and dirt-proof, the magneto being entirely enclosed. Removal of the magnets



The Berling Magneto, Type N
This magneto is dust and waterproof and is recommended for small commercial cars

will not expose the armature bearings or other vital parts.

The interrupter is very cleverly designed in such a way that there is no danger of the interrupter arm sticking, thus eliminating any possibility of missing from this cause. The high tension current carrying parts are not exposed so that there is no possibility of short circuit or loss in efficiency through leakage, and no danger of accidental grounding. In the design of the distributor, the mechanical parts have been reduced to a minimum. It is very easy to remove and clean the brushes; this is a very important and practical point. The oiling arrangement is such that it is impossible to flood the magneto with oil. It is very easy to set or time this magneto, and the connecting of the cables to the spark plugs is very simple.

The magneto is very well made, the workmanship being high grade and the material the very best obtainable. The frame is one solid unit, screws will not loosen and permit wearing, and the interrupter cams are part of the housing itself and cannot work loose. The two bearings used are of high-grade material. Great care and attention has been given to the magnets, which are of tungsten steel.

A NEW SHOCK ABSORBER FOR TRUCKS

The Master Suspension Company, 51 East 42nd Street, New York City, is placing on the market a new shock absorber for trucks—the Master Suspension.

The Master Suspension

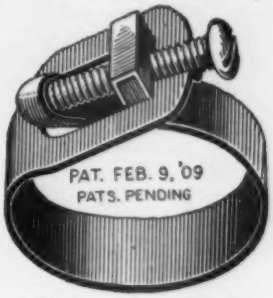
As shown in the accompanying cut, this device is placed on the front axle, and consists of two springs, which are designed to absorb the shocks before they reach the spring beds. One-half set, to fit front axle, sells at $50; a complete set, for both axles, at $100.

MOTZ ADDS TRUCK TIRE

The Motz Tire and Rubber Company, Akron, O., maker of the Motz cushion tire, has added a new cushion truck tire to its line. The design of this tire follows that of the pleasure car type, with such changes as were found advantageous.

THE ERICKSON HOSE CLAMP

The hose clamp here illustrated is made on an entirely new principle, one end of the band intersecting the other, giving a wide range of adjustments and bearing evenly all around the hose without cutting the rubber. Another advantage is that there is but one piece to handle, either on or off the hose. The standard finish is electro-galvanized, but other finishes may be had. Sizes range from ⅜ in. to 2 in.; prices $1 to $4 per doz., light, or $2 to $6.50 for heavy type.



Erickson Hose Clamp

They are manufactured by P. E. Erickson & Son, Port Chester, N. Y.

Hints on Truck Maintenance

Keep the spring clip nuts tight.

Filter oil as well as fuel.

If the truck is left standing for several days or a week shut off the gasoline supply valve. If left for a long period of time jack up the frame so as to relieve the springs of all weight.

Do not use a large wrench on a small nut.

An oil pump or squirt gun is a handy thing.

If it is necessary to work on trucks at night use electric light. Do not bring any other light near the truck or smoke near it. If you wish to clean the motor with gasoline, do it outdoors in the daytime.

In cold weater keep an extra oil squirt can on hand with gasoline in it; this is useful in starting a motor that has stood all night in a cold garage.

Black asphaltum paint is excellent for touching up metal surfaces finished in black.

Cleanliness is just as important for a truck as for a human being, not only for appearance's sake, but for the actual "health" of the machine. Accumulations of mud and dust not only look bad, but are liable to work their way into the mechanism and create havoc. Sometimes the dirt will conceal conditions that need remedying, and which, being neglected, become worse and worse until the truck is laid up for far more extensive repairs than would have been the case had the trouble been caught at the beginning. One such case occurred recently, when the spring broke without any apparent excessive load. Examination showed that the eye clip on the forward end had been broken for some time, but that as it was covered with rust and dirt it had not been noticed. If the machine had been carefully washed every day, the break would have been seen and the trifling expense of a new clip would have saved the spring.

When it is impossible to adjust a carburetor so that the engine runs evenly at slow speed, the fault may not be the carburetor's. If the carburetor is adjusted properly look for air leaks between the throttle and engine on the intake line.

Missing at low speed is not the fault of a carburetor unless it is out of adjustment as to mixture. When impossible to adjust a carburetor so that an engine runs evenely on slow speeds, first look to air leaks between the throttle and engine in the intake piping, especially at the cylinder connection. This is sometimes indicated by a wheezing or whistling sound attributed wrongly to the carburetor. Next look for faulty ignition and go carefully over the timing of the valves, both inlet and exhaust; the time of opening of the inlet valve and closing of the exhaust valves are most important points. To change either on a single cylinder machine necessitates changing the gasoline adjustment. A carburetor cannot furnish a correct mixture to four cylinders, one or two of which may have differently set valves or one of which needs grinding in.

The practice of giving the mixture more gasoline till all four cylinders are firing is bad. It causes sooty deposits in those cylinders which get too much and the motor will overheat under load. Better have all cylinders working evenly, with an even compression, so they all sound alike when the engine is throttled down and exhaust cut-out opened.

Badly worn, mechanically operated inlet valve guides will sometimes leak air enough, when the throttle is nearly closed, to spoil the mixture in one or more cylinders.

Misfiring on a four-cycle engine may be caused by pitting or clogged valves, a leak around the spark plug or piston rings being clogged, or worked around so that the space between their ends get in line. The auxiliary air valve spring in the carburetor may be set weak, which will account for the occasional popping noise in the carburetor, or the gasket of the spark plug may be broken. Weak batteries will also cause this condition. With the two cycle engine, if your engine fires every other revolution, you have too rich a mixture.

With a single pressure for both fuel and lubricating system, misfiring may be due to a lack of pressure in the gasoline line, which is not apparent until a low gear is engaged or the throttle is opened. A frequent cause of this low pressure is a very little supply of lubricating oil in the tank which affords the air passage to escape by the drip feeds The compressed air will be strong enough to force its way through the low level in the tank, and while the oil will come through the feed, although at a reduced rate of speed, air will accompany it with a reduction of pressure on the fuel. One way of overcoming the trouble is to reduce the strength of the spring on the pressure relief valve so that it will blow off before the air is compressed enough to escape through the oil.

After a motor stops, should a carburetor drip gasoline for a few minutes and then cease, chances are that the mixture has condensed in the manifold and run out, or the carburetor has been "loading up" in some pocket or flat space. Motor efficiency can never be obtained under conditions of this character.

In the extreme changes of atmosphere, the moisture from the air in the tank will condense on the inside surface. All this water will find its way by gravity into the carburetor, water being heavier than gasoline. Draining the carburetor by the petcock may not draw the water from the spray nozzle, in which case start the motor and open the throttle and needle valve. This will give a larger opening in the nozzle to draw the water quicker. The moment the engine speeds up it will indicate the water is out of the spray nozzle. Cut down at once the needle valve adjustment to its normal position, otherwise the motor will be flooded with gasoline and choke.

It is deemed necessary by most truck users to cleanse the crank case every 1000 miles. After removing the old oil through the plugs or petcocks at the bottom of the case, it is a good plan to pour in a good amount of kerosene, run the motor a few minutes, and then drain off the kerosene thoroughly. Then fill with fresh, clean oil. The kerosene cuts out the gummed oil and other foreign matter, which may have lodged in the recesses.

Occasionally clean out the filter between the tank and the carburetor, and sometimes disconnect the pipe between the tank and the filter, and see that it is clear. While the pipe is disconnected turn on the gasoline cock and see that the gasoline is flowing through it freely. It would also be well to disconnect the pipe at the carburetor end and make sure the flow through it is free.

TRUCK SAVES PLANT SHUT-DOWN

A big textile manufacturer in Philadelphia recently experienced trouble with his power plant, which finally resulted in an engine break-down. The parts necessary for the repair weighed about 3½ tons, and had to be obtained from a Newark, N. J., manufacturer. To wait for a shipment of these parts by freight would mean a complete shut-down of the plant for six or seven days and a consequent heavy loss through stoppage of manufacture. It was therefore decided to make an attempt to send a big G. M. C. truck over the road for the necessary parts—a distance of approximately 95 miles each way.

The truck left at 4 o'clock one morning in the rain and by the time it reached Newark at 12:15, the roads were in a very bad condition.

At 4:30 in the afternoon the truck started on the return trip. As the afternoon progressed, the roads had become worse and worse, and by the time Rahway was reached and a stop made for supper, everything was enveloped by a very heavy fog. Practically all automobile traffic along the suburban roads was tied up and a number of touring cars waited with the truck for the fog to lift. Later in the evening a heavy wind sprung up and by the time the outskirts of New Brunswick were reached, the storm had developed great force. The driver reported that some eighteen or twenty times it was necessary to make stops in order to drag trees from across the road by means of a tow-rope and in one instance it was necessary to waken a farmer in order to borrow an axe with which to sever the roots of two trees which had become firmly embedded in the road. The truck finally arrived in Philadelphia in the morning after a hard night's driving over roads made almost impassable by the storm.

WHAT THE MOTOR TRUCK DRIVER SHOULD DO

In the morning the motor truck driver should see that his car has a full supply of water, oil and gasoline. Gasoline should be strained through a chamois, and oil through a fine-screened funnel. If no oiler is fitted, an extra can for replenishing the supply during the day should be carried. The battery, either storage or dry cells, should be examined for loose connections, breaks in wiring, etc. The brakes should be adjusted so that they operate before the pedal touches the floor and the emergency brake is holding when the lever is halfway up the quadrant.

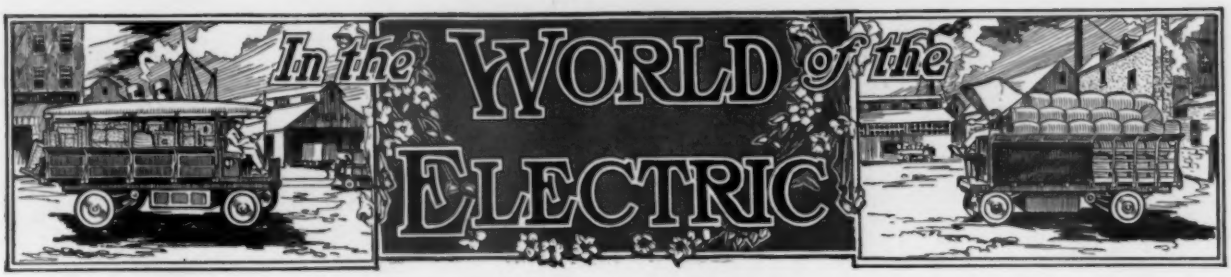
See that all drain cocks are closed, and that the transmission case has sufficient oil.

When compression grease cups are removed for filling, they should be screwed on far enough to prevent their falling off and becoming lost during the day. All oil lamps should be trimmed and filled, and tightened on their brackets if necessary. While at the tail lamp the license tags should also be inspected. Tires should be inspected for nails, stones, etc., imbedded in them. All necessary tools should be placed in the box, and this fastened so that it can not shake open and the tools be lost.

When ready to start the car see that the change-speed lever is in the neutral position. See that the switch is turned to the "on" position and the throttle is almost closed. Be sure that the gasoline is turned on at the tank and is flowing freely to the carburetor. Before the motor is stopped at night, put a little kerosene in the cylinder through the compression cock, and a little oil in the crank case, if it is needed. Then turn off the gasoline at the tank and throw off the ignition switch. If it is cold weather, and the garage is not heated, the water should be drained with the motor running so that the whole system will be drained.

Peerless 'Bus

A pay-as-you-enter 'bus on a Peerless three-ton chassis; operated by the Linden Heights Realty Company, of Chicago



Electric Vehicle Association of America Holds First Fall Meeting

For the first meeting of the Electric Vehicle Association of America, after the summer season, there was an unusually large attendance in the Edison Auditorium, New York, September 23rd, at eight o'clock.

President Arthur Williams presided in his usual genial manner and in connection with the subject of transportation related some very interesting incidents concerning primitive transportation in Spain, through which country he was touring during July. He also stated his satisfaction in the work which the association has been doing, what it is planning to do, and urged a large attendance for the convention to be held in Chicago October 27th-28th.

"The Value of Power Wagon Operation" was the topic of the evening, presented by F. J. Ryan. Other speakers were: F. W. Smith, vice-president; F. N. Carle, W. C. Andrews, Dr. Pratt and H. B. Pride.

As an illustration of the enormous field for the electric truck, Mr. Williams stated that $1,600,000,000 worth of feed was consumed each year by the horses and mules in the United States, while the income of central stations is only $400,000,000, or only one-quarter the amount expended in horse feed. Surely here is a great field for the central station to enter. As an example of getting business he explained how Mr. Edison, in the early days of New York, made a survey of the city by districts, obtained the amount of gas consumed in each district, calculated what the returns from electricity in the same district might be, then went after the business and got it.

One of the important facts brought out was the improvement in the sanitation of the streets since the motor truck has become popular, and in this connection the consequent saving in the City Department of Street Cleaning. A new motor truck designed for this department has received the approval of Commissioner Edwards and may be placed on the streets very soon. The use of motor trucks in this department would greatly improve the noise conditions in the streets at night, especially if it were electrically propelled, and bring relief to the thousands of the community who are annoyed by the noise of garbage wagons and white wings at night.

W. P. Kennedy strongly urged the manufacture of a smaller battery with capacity adequate for a two-mile circuit, thus decreasing the expense for small users—such as bakers, butchers, etc., who now maintain a one-horse vehicle and whose business covers a very limited district.

It was the consensus of opinion that high cost of transportation means high cost of living and the community is today more interested in this one fact than any other, although E. P. Howland asserted that efficiency in delivery was the great need whatever the cost. It is certain that electric trucks have already proven their economical features and are doing much toward decreasing the price of foodstuffs.

E. W. Curtis, Jr., stated that, according to recent statistics, there were 5500 motor trucks in New York City, 2150 of which were electric.

A relief for the congested conditions of the streets and terminals, as well as the steamship docks, was suggested in the use of the electric truck, as having the following advantages:

Access to all docks, some of which are closed to gas cars.

Small space occupied in comparison with the horse—only two-thirds the space being required.

More prompt delivery than with horse vehicles.

Larger loading capacity.

No limit to the number of hours in use—night transportation being favored to relieve the streets during the day and as a means of accomplishing double the work if necessary.

The following are extracts of Mr. Ryan's paper:

> It must be taken into consideration however, that a very large percentage of the goods which are moved on steel rails by steam propelled wheels must be handled twice or more in transit, and it is here that the real benefits of commercial vehicle transportation are shown. Stop to consider that it is within a brief period that the introduction of electricity and gas to a moving vehicle has been perfected, then you will realize that we, in the commercial vehicle industry, are factors in history that marks equally as great an advancement as did the evolution of the wheel centuries ago.
>
> This brings us close to the present period. How many of you gentlemen present, or how many people identified either in the trade or in business generally, appreciate that a large percentage of the world's goods transported by railroads, is handled twice or more in transit? I do not think that 80 per cent. is an exaggeration, and if such is the case, and the commercial car can show even an advantage of 5 per cent. over the horse-drawn vehicle, it unquestionably means a saving of 10 per cent. on a particular piece of material, in transportation expense, and the saving to the consumer should be as 10 per cent. bears in proportion to the money value of the material purchased.
>
> When I state that the commercial car can show a saving of 5 per cent. over the horse, I merely use that as a minimized percentage, as we know instances where 60 per cent. is being saved by their use. The industry as a whole is passing through a teething period to which all industries are subject in their early development. The use of such vehicles, although numbering at the present time at least 50,000 in the United States alone, is but in its infancy. The advantages in the use of commercial cars unfortunately have been exaggerated in individual cases by salesmen more anxious to make a sale than please a customer, and in consequence we hear of some failures in the use of this modern method of transportation. There are limitations which we all should recognize.
>
> Manufacturers, dealers, engineers, publishers and everyone who has to do with the sale of commercial cars should constantly bear in mind that by exaggerating the advantages of their product they are laying the foundation for a dissatisfied customer, but on the contrary, if they would realize and emphasize the restrictions in the use of a vehicle, that even then, the sale and consequent advantages of commercial cars be they electric or gasoline propelled, are so great that each satisfied customer will make sales faster than the industry can take care of the demand.
>
> While many of the difficulties that are operating against us today are the result of transportation by means of horse-drawn vehicles, the necessity is today apparent for improved streets and roads, improved loading and unloading platforms, improved handling of merchandise within a building, and last, but not to say the least, the breeding of a new type of delivery superintendent who will appreciate that every minute that a commercial car is standing still is wasteful and costly.
>
> In conclusion, let me say that it is not a question today of relative merits of the electrically propelled vehicle or gasoline propelled, as unquestionably each has a field, and there are few installations where both powers cannot be used to advantage. The problem that confronts us all, that means a future for us all, that means success for us all, that means a reduction in the so-called high cost of living, from which will accrue benefits to the community at large, is the elimination of the horse for business purposes, and if we keep a few basic principles before us, we will be carried to success without particular brilliancy on our part.

G. V. EXHIBIT AT ELECTRIC SHOW

The exhibit of the General Vehicle Company, Long Island City, N. Y., at the New York Electrical Exposition and Motor Show will be found at booths 77 and 78. The exhibit will include one 1000-lb. G. V. wagon of the 1901 type, one 1000-lb. G. V. wagon of the 1907 type, one 2-ton G. V. chassis of the 1913 type, one 1000-lb. G. V. chassis of the 1914 type and one 1000-lb. G. V. wagon of the 1914 type. The last two articles mentioned will be chainless. Among the improvements on the new 2-ton chassis are: A worm drive. Sheet Steel Controller Box, which is indestructible and absolutely fireproof.

Cut-off Switch—this improvement removes absolutely the danger of starting the truck when it is charging and enables the garage mechanic to work on the controller when the battery is charging. It also enables the driver to cut his vehicle dead when he leaves his seat, thus preventing boys or irresponsible persons from starting the car in the driver's absence.

Lamp Circuits—cartridge fuses on the lamp circuits are a big improvement over the open fuses used in the past as they are safer from a fire standpoint, and easier to replace without danger to the mechanic in replacing them.

Plug Portable Lamp—the addition of the plug receptacle for portable lamp is a big improvement from the garage mechanic's standpoint, as it enables him to quickly connect the portable lamp without using the head or tail lamps for this purpose, as he has had to in the past.

Rigid Metal Conduit—placing all wiring in metal conduit is the biggest improvement of all to the company's mind. This makes the important part of the truck free from injury from water, acid or mechanical causes, and to a large extent, will do away with the grounding of the battery due to injured wiring. It also makes easy the replacing of any wiring which may become damaged, without removing the body or any other part of the truck.

Grease Cups—the addition of grease cups on the spring link bolts will, undoubtedly, increase the life of the links, bolts and spring eyes.

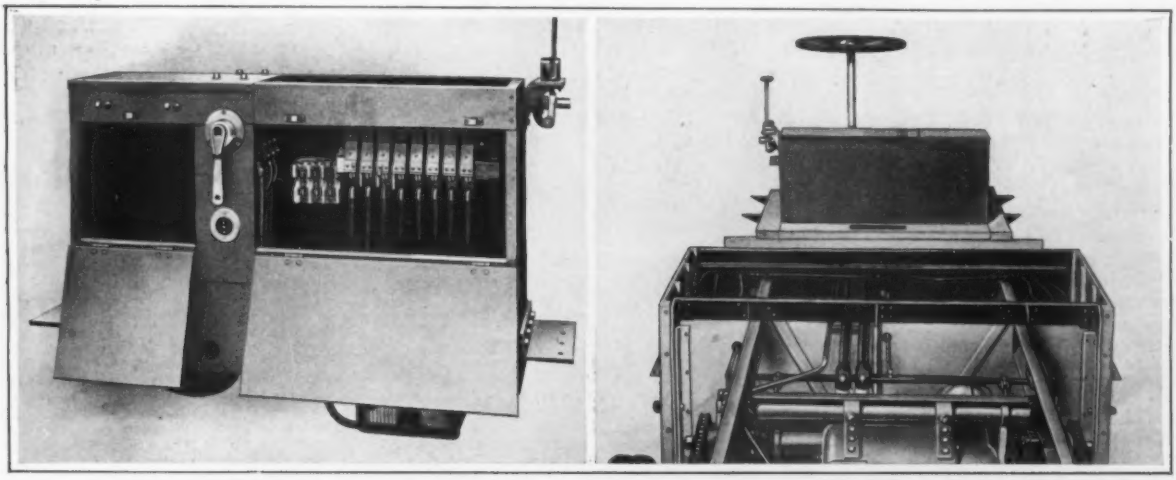
Sheet Steel Tool Box—the addition of a sheet steel tool box under rear of vehicle enables the driver to carry such tools as are necessary without interfering with any other parts of the car.

Emergency Brake—is a great safeguard on heavy draft vehicles, especially in coasting down severe grades. It also removes the practice of some drivers using the controller as a brake, which often resulted in damaging controller, motor and battery.

WARD TRUCK EXHIBIT WILL INCLUDE FIVE MODELS

The exhibit of the Ward Motor Vehicle Company, New York, will consist of one type, EO, with a 625-lb. capacity and a 75-mile radius; one type, EA, with a 1250-lb. capacity and a 60-mile radius; one type, EB, with a 2500-lb. capacity and a 50-mile radius; one type, EC, with a 5000-lb. capacity and a 45-mile radius, and one type, ED, with a 10,000-lb. capacity and a 35-mile radius.

These cars have controllers of the continuous torque type, with four speeds forward and two reverse. Motors are



New Fireproof Sheet-Metal Controller Box

Rear View of G. V. Chassis

extra large, either Westinghouse or General Electric is furnished. Chain equipment is Morse chain from motor to countershaft and Whitney detachable chains from countershaft to rear wheels. The battery equipment on all cars is more than ample for the work in hand.

The axles on Ward cars are rectangular in section and extra large. All spindles are fitted with Timken roller bearings, which have a large factor of safety over the rated loads. The steering gear is a specially designed pinion and section type. The brakes on all models are external duplex and have large diameters and widths. Tires are extra large solid. Types EC and ED have dual rear tires.

Ward cars are customarily painted and lettered to suit the purchaser. Head lamps, tail lamps, storm curtains, cushion, bell, hub odometer, kit of tools and jack complete the equipment.

EXIDE BATTERY EXHIBIT AT NEW YORK ELECTRICAL SHOW

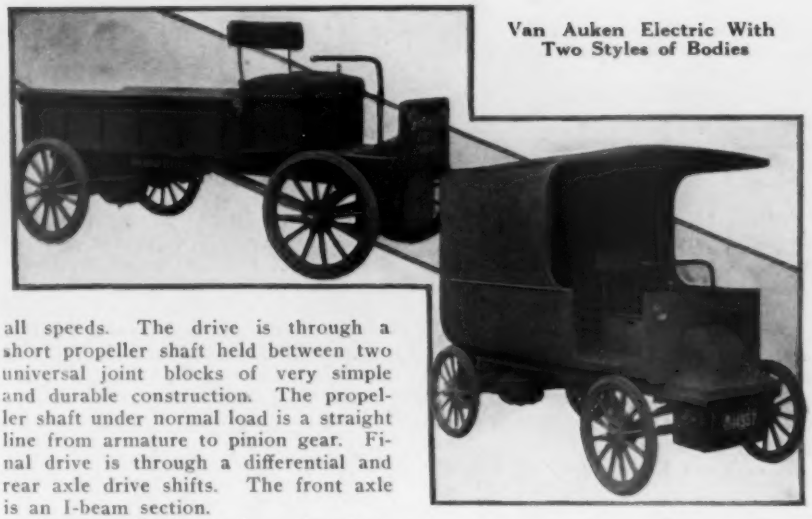
The Electric Storage Battery Company, Philadelphia, Pa., will exhibit at the New York Electrical Show complete "Exide," "Hycap-Exide," "Thin Exide" and "Ironclad-Exide" batteries for electric commercial vehicles and cutaway cells, as well as separate plates and parts.

The company will also have some large colored transparencies, electrically illuminated, showing an electric fire engine, equipped with an "Ironclad-Exide" battery; an electric ice truck and trailer using a "Thin-Exide" battery; a large pole truck, fitted with an "Exide" battery and one of the new storage battery cars recently put in service by the New York Railways Company, and equipped with "Hycap-Exide" battery. There will also be a working exhibit of the type X battery of automobile starting, lighting and ignition. Headlights, sidelights and tail lights, such as used on automobiles and a bank of lamps will be illuminated to demonstrate the starting ability of the battery. The current required for them will be equal to that required for starting an automobile engine.

THE VAN AUKEN ELECTRIC WAGON

Two bodies furnished on the one chassis, make up the line manufactured by the Van Auken Electric Car Company, of Connersville, Ind. This wagon is built to provide an economical method for the delivery of light packages. Maximum load is 750 lbs.; maximum speed, 12 m. p. h.

The motor is of the continuous torque type with the entire battery in series at all speeds. The drive is through a short propeller shaft held between two universal joint blocks of very simple and durable construction. The propeller shaft under normal load is a straight line from armature to pinion gear. Final drive is through a differential and rear axle drive shifts. The front axle is an I-beam section.



Van Auken Electric With Two Styles of Bodies

The controller is of the rotary type, very accessible, simple and efficient. It is operated by a side hand lever. The motor and controller are placed very close together, making the leads short. Steering is by a lever on the left side. Brakes operate on the rear wheels.

Springs are semi-elliptic, cross wise, both front and rear. Batteries, which are 16 cells, MV, 11 Hycap Exide, and which give a fifty-mile charge, are carried at the extreme ends of the chassis. Wheelbase is 80 in., tread 51 in. Weight is 1625 lbs. Tires are Firestone solid, 28 x 2 in. Regular equipment includes voltmeter, ammeter, odometer, electric lights and electric horn.

This wagon is offered in two bodies, either panel body, or open stake and flare body, at $1000. In the closed body, the driver's seat is half the width of the body, providing room to carry long packages. Platform is 30 in. from the ground.

ELECTRIC TRUCKS ADVOCATED FOR TEXTILE-MILL USE

At the convention of the National Textile Manufacturers of America, held recently at Atlantic City, N. J., Day Baker, the New England district manager for the General Vehicle Company, presented a most interesting paper on "The Advantages of Motor Trucks in Cotton Manufacture." Mr. Baker's paper, in addition to being exceptionally well prepared and very interesting, was printed in full and illustrated by about twenty-five photographic reproductions of installations made by him for the various textile industries of New England.

In addition to the paper itself being printed and illustrated, Mr. Baker showed some fifty stereopticon views on the screen and explained them in a manner as to the desirability of electric motor trucks for textile mills. The convention extended to Mr. Baker a hearty vote of thanks for the careful and interesting way in which he handled the subject of mill transportation.

1914 DETROIT ELECTRICS HAVE DAIMLER-LANCHESTER WORM GEAR

For three years the Anderson Electric Car Company, Detroit, Mich., has been employing the worm gear axle in some of its cars. As a result of this experience, 1914 models of the Detroit Electric are fitted with the Daimler-

Worm Runs Constantly in Oil

Lanchester worm gear, which is silent and smooth in operation and unusually efficient. A new mounting of the worm is applied in the new Detroit Electric worm gear axle which is so designed as to insure perfect and positive lubrication. Mounted at the bottom of the axle below the ring gear, this worm runs constantly in a bath of oil.

Electricity is Life—Trucks Infuse New Life

The Newest Idea in Loading Merchandise

By WARFIELD WEBB

ONE feature of the commercial car industry to-day that is finding general interest among both manufacturers and large retailers, is the cost, compared with that of the horse vehicle, its upkeep, time saved, labor minimized and general procedure, good and bad. There has been a notable change in respect to some important phases of the matter within recent months and the advantages accruing in favor of the users have been pleasing and profitable.

Among the large stores in Chicago that have within the past two and one-half years adopted the motor truck as a means of delivery, the Boston Store can be cited as a special instance. Within that period the store has placed in commission thirty-one autos of various types and is constantly adding to its equipment, and doing away with horse vehicles. This concern, among the largest department stores in the city, uses both the electric and gasoline cars. These vary from one to three tons in capacity, with the following makes of cars: Grabowsky, gasoline; Mack, gasoline; General Vehicle Company, electric; Baker, electric, and Washington, electric.

The daily trips by this store are farther than by most others in the city, and extend to Gary, Ind., a distance of thirty-two miles; Waukegan, Ill., thirty-two; West Chicago, thirty, and similar long distance points. These were never attempted prior to the installation of the motor trucks. One trip per day is made to these outlying points, and two trips per day to points that are one-half this distance. Even on the short hauls, that is, the frequent stops on a block, there is a gradual adoption of the motor car for such purposes. One finds the time saved to more than counteract the difference that might be noted in cost of operation as compared with the horse vehicle.

As to the comparative cost as between the horse vehicle and the motor car, there is a difficult problem to solve. The cost of delivery at this store varies, and the entire operation, from the very beginning to the termination of the delivery, is included. Every possible device has been installed to reduce the cost, and the adoption of the motor cars, among the latest, was done from the fact that it was believed that there would be a still further cost reduction in this department. That it has proven a fact is best noted in the determination to add as rapidly as convenient a complete system of motor car delivery.

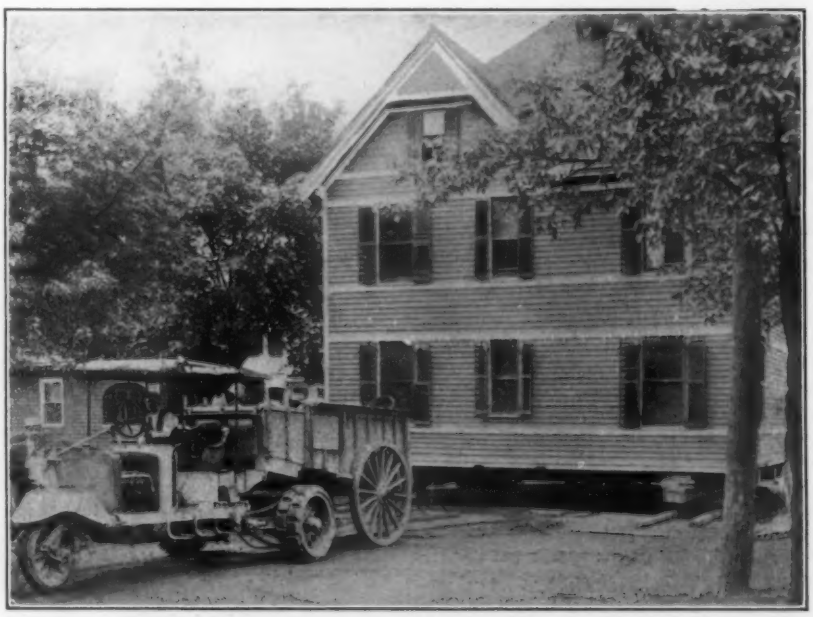
One feature at this store, and one that is not equaled in the country with a possible exception, demands special mention. The rule with many stores of this kind is the loading of packages on the street, or at least in an alleyway, and the disadvantages, waste of time and delays due to the inclement weather and other annoyances, too numerous to mention, are calculated to retard the satisfactory routine of the system. In seeking to overcome this obstacle the Boston Store devised a plan for rapid-fire action, and while it necessitated cost and a new idea, was found to be of wonderful help in the process of loading or unloading merchandise.

The delivery section is located in the second or sub-basement, and is about 30 ft. below the street level. Two immense elevators were constructed so as to be lowered directly from the alley into this section. The cars and wagons are run in from the outside on to these elevators and lowered to the delivery section and run to loading platforms and loaded. The matter of running them on to the elevators and then to the street level and out is a simple affair. The capacity of these elevators is ten tons each, so that there is no danger of any overloading, and the heaviest load can be handled with ease.

In this connection there is still another feature. Where formerly the furniture warerooms were located some distance from the store, the installation of the large elevators made it possible to load and unload the furniture directly from the fourteenth floor, and this is now done. The automobiles are raised to the above floor and the cars are run into the room and there loaded and run out just as the other deliveries are made. This idea is one that is in several respects unique, and it has no other equal in the country.

These features, together with the fact that there has been a continued increase in the number of cars installed, makes the belief far more certain that there will in a short time be few of the larger and even the smaller stores that are not using the motor car in preference to the horse vehicle for all purposes.

The elements of time, cost and labor are vital to the big stores to-day and there is the whole solution of the delivery system. The fact that their territory is spreading out farther and farther each day makes it imperative that the means of delivery be swift, sure and in all respects satisfactory, such as the motor car alone can and does guarantee.



Knox-Martin Tractor Taking a "Constitutional"
This tractor moved two fifty-ton houses at the same time, besides carrying six tons of stone

The overhauling concerns not so much the past, as the future

Official Results of the French Military Trials

By OUR FOREIGN CORRESPONDENT

OUT of the record number of ninety-eight machines entered for the French War Office subsidy trials, seventy-four started, and seventy finished The competitors were divided into two broad classes—trucks, and trailer hauling machines—and with due regard to their working conditions and limitations different routes were assigned to each class, the aggregate amounting to 2107 miles for the trucks, 1478 for the trailer haulers.

In previous years these trials have consisted of a series of daily runs over various routes from Versailles as the center, but for 1913 this method was only adopted for the first week, to weed out the weaker machines, and for the following three weeks the machines were taken over a long circular course by daily instalments, the route followed by either class, of course, being different, but each ending at the same stopping point at night.

Hill Climbing and Trailer Hauling

On the whole, the machines showed good hill climbing capacity. During the preliminary trials up Chanteloup hill with the gradient of 1 in 8.3, nearly all the wagons obtained a reasonable speed; only few had to take the hill slowly.

Later hauling tests were made up a 20 per cent. grade at Vaumurier, in which all vehicles had to haul a brother machine up the hill. The road surface here was good dry macadam, and without load all the machines ascended easily, but with both vehicles laden, radiating surfaces proved hardly adequate, and there was much steaming. A Rochet-Schneider three-tonner did a rather good performance by hauling a disabled brother truck up this hill and onwards for seventy-two miles at an average of 9.3 m. p. h., and on a consumption estimated at one-fifth less than the average of two wagons.

On the second day of the continuous trial, too, another haulage test for the trucks was made up a long hill with a maximum gradient of 1 in 13 with somewhat similar results, and on leaving Lyons some experiments were made by the Saurer, Peugeot, Latil and Renault machines (these were trailer-hauling trucks) in winding trailers up the hill at Montriblon, which is 325 yards long, and attains a maximum gradient of 1 in 8.3 with an average of 1 in 9. The difficulty of the task was increased by two successive sharp turns, which involved taking the hill by instalments, the motor truck climbing the bend paying out rope all the way and hauling the trailer up to it; then another instalment, and so on. The Saurer truck (for most of these so-called tractors were only trucks hauling trailers) with a load of 7¼ tons hauled up its trailer weighing 7 tons at 39 yards a minute up the maximum gradient, and then coupling up started off on the 1 in 9 gradient at at about 2.2 m. p. h. average, traveling the steepest part at over 1½ m. p. h.

The Latil front driven tractor of just over 7 tons has two winding speeds worked from the gear box by a worm shaft, and this machine drew up its two trailers, of over 9 tons, at 20 yards a minute on the first, and 40 yards a minute on the second speed, while coupled to trailers it easily started on the 1 in 9 gradient at nearly 2 m. p. h.

The seven and three-fourths 45 h. p. Peugeot worked its winch from a bevel gear driven in the gear box, and at a first attempt hauled at 44 yards to the minute, while a rather higher speed was attained on a second attempt with the 7½-ton trailer. On the steepest gradient of 1 in 8.3 this machine started away at over 2¾ m. p. h.

In the test with the Renault, which has a winch arrangement similar to that of the Saurer and Peugeot, the test was abruptly ended by the cable breaking, and the truck of 7¼ tons coupled to an 8½-ton trailer had perforce to mount the hill coupled, which it did at an average of over 4.3 m. p. h.

At Limoges again the trucks were submitted to another such test with very similar results.

Poor Braking

Perhaps the most generally defective feature was in the brakes. On the second day of the preliminary trials many were unsatisfactory either from bad adjustment or lubrication leakage during a test gradient of 1 in 11 at Marly, while later on in the trials during the run from Clermont-Ferrand to Montlucon in a severe thunderstorm, several of the competing machines came down the steep hill into the latter town at a dangerous speed. Another test was held on the following day between Montlucon and Gueret down a 7 per cent. grade at Ambusson, and though the drivers had been warned of the test, and brakes had consequently been overhauled, only two, the Berliet and Clement-Bayard, pulled up in short enough distances to meet with full approval.

The Value of Chain Encasement

On the whole, the road surfaces were good, but between Nevers and Autun the road, which was under repairs, was so bad as to make running over it very difficult, except at low speeds, and on this bit chain cases fully justified their existence in preventing flying stones from getting into the chains.

Trucks Grouped for the Trials

Illicit Speeds

Although officially a maximum of only 15½ miles was allowed on the homeward stretches of the long trials, nearly 25 m. p. h. was sometimes attained with these heavy vehicles, and though this meant racing the engines severely for long periods, the machines at the end of the trials showed no unjustifiable usage.

Carburetted Alcohol as a Fuel

On the first five days of the main circular trial the competing cars ran on carburetted alcohol. During the first day they ran very well on this fuel, but after the second day a thick deposit in the cylinders made starting difficult, and many drivers injected gasoline until they were found out, when the army authorities insisted in starting on alcohol. The difficulty did not prove insurmountable, but at present the use of this fuel points to the convenience of a mechanical engine starter. The Delahayes seemed to run particularly well on alcohol, the consumption of one of these machines averaging just over 10½ gal. to a day's run of 68 1-3 miles.

Official Results

In these military trials the prizes merely consist of the military approval of the type that the truck represents, rendering it, or any similar vehicles eligible by the military authorities. The following are the successful machines:

1 and 2 Delahaye (type 59).
3 and 4 Delahaye (type 60).
5 and 6 Delahaye (type 62).
7 and 8 Delahaye (type 63).
9 and 10 Panhard-Levassor (type 14 R-KV).
13 and 14 Latil (type C3 front wheel drive).
19 and 20 Latil 4-wheel drive.
25 and 26 de Dion-Bouton (type DV 2).
33 and 34 Delaugere and Glayette (type LO 2).
37 and 38 Berliet (3-ton type).
39 and 40 Berliet (3½-ton type).
41 and 42 Berliet (3½-ton type).
43 and 44 Berliet (2-ton type).
51 and 52 Saurer (type B).
53 and 54 Saurer (type C tractor).
57 and 58 Brasier (type CAM 14).
65 and 66 La Buire (type 400A).
67 and 68 Peugeot (type 1.504).
87 and 88 Aries (type R 6).

Some Engine Generalities

Reviewing the machines as a whole, the general tendency was towards a moderately long stroke; 100 x 140 represents the most general dimensions, giving about 24 h. p. at 1000-1100 r. p. m., which is an engine speed generally regarded as quite sufficient for heavy work. In spite of the high speeds towards the end of the trials governors were generally fitted.

In all cases care has been taken in lubrication design, and according to "Le Poids Lourd" the average consumption worked out from about .006-.007 lbs. to the ton-mile, the latter figure representing about 1 gal. to 240 miles; not very low, perhaps, but, then, on such trials the mechanism is invariably oversupplied, to be on the safe side.

PARIS SPLASH-GUARD TRIALS

About a year ago some splash guard trials were held in Paris, but the Parisians do not intend to let matters stand still in this respect. The words "splash guard" must be taken as applying to devices for prevention of splashing sideways from the wheel treads. These most recent trials only emphasize the opinions formed by previous tests and serve to establish the circular band type of splash guard more strongly than before. The first prize of $300 was awarded to the Vincenot apparatus, shown in Fig. 1, in which splash guard devices, fitted on either side of the tire, are composed of

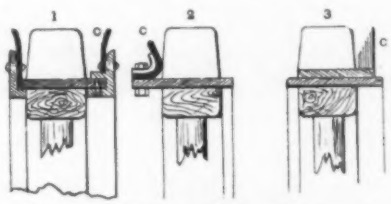
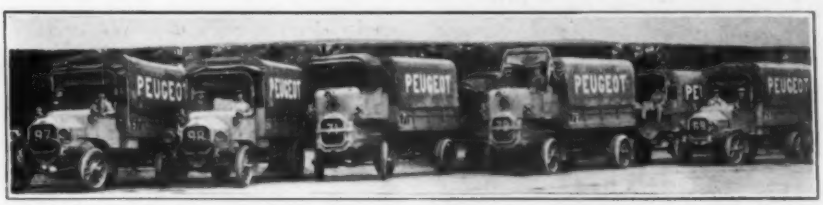


Fig. 1. The Vincenot splash-guard apparatus, which won the first prize. Fig. 2. The Menu device. Fig. 3. The splash-guard contrived by the General Omnibus Company, of Paris.

chrome leather bands. These are seen at C, as also their methods of fixing to the wheel rim. The outer circumference of the bands are slightly greater than the tire, and consequently, as they just touch the ground, all the mud that would be thrown sideways is splashed on to them and from them is thrown directly backwards from their outer periphery.

Among the second prize winners the Menu device, seen in Fig. 2, calls for particular remark, for this firm has done more than any other in France for the development of this type of splash guard, and their underlying idea of producing an efficient yet very cheap device necessarily commends itself to the user of business vehicles. It is cheap, because it is made out of half of an old solid tire. Fig. 3 shows the design of the General Omnibus Company of Paris. In this an ebonite ring is mounted on the wheel rim; this ring is just large enough to touch the ground, and close to it are placed a number of rubber rings or bands, each a little smaller than its neighbor, but in all cases the underlying principle is the same.



A Group of Peugeots
These cars were successful competitors in the French military trials

THE COMMERCIAL CAR IN MILITARY MANOEUVRES

The autumn is the time of army manoeuvres in Europe, and every year the influence of the commercial car is making itself felt more and more on these occasions. As might be expected, the French used automobiles very largely during their manoeuvres in the southwest of France, and over an area seventy-five miles in diameter. The troops were revictualled in a way that led M. Etienne, the Minister of War, to say that the commisariat "left nothing to be desired."

But the duties of the automobile were not confined to the transport of food. Wireless telegraphy vehicles, traveling workshops (especially for the aviation sections) ambulances and water carrying wagons, were all in evidence, while certain motor 'buses gave most excellent service as traveling offices. Also motive power was used, and used very successfully for the transport of batteries, and down towards Toulhouse, some Chatillon-Panhard tractors, with a four wheel drive, in hauling the guns, each did the work of 25-30 horses. This too, they did with the greatest regularity, and the enormous amount of work that they performed was partly due to their superior speed, for over good roads they managed to travel at 12½ m. p. h., and even over really bad ground, moved at half this pace.

In French army work there seems a tendency towards a four wheel drive. Some of the Latil tractors on this principle also performed very effectually.

But apart from any particular type, there is no doubt that the general impression given by these manoeuvres has been that the employment for motor traction for military purposes in France is increasing every year, and that this year has shown not only great strides in quantity, but enormous progress within only twelve months.

The British Society of Motor Manufacturers and Traders have decided that, successful as was their Commercial Car Show in July, it is not advisable to organize a similar display for 1914.

Few Heavy Hardware Wholesalers Using Commercial Cars

Prominent Examples of Concerns in This Line That Have Benefited by the Use of Trucks

IT is somewhat difficult to draw the line between wholesale hardware, engineering contractors' supplies and plumbing supplies. In the strictly wholesale hardware line there are comparatively few users of trucks, in fact there are relatively few large concerns in this line of business. In the following we take up in more or less detail the most prominent New York and Philadelphia concerns who have had experience with motor delivery.

But a very small percentage of the hardware jobbers or wholesale hardware companies give a free delivery service, the custom being to charge the purchaser whenever deliveries are made. This custom being so general, is probably another reason that so few trucks are used in this line of work.

Most prominent among these is Hammacher, Schlemmer & Company, of New York.

The Pioneer Wholesale Hardware Electric Truck User

It is with pleasure that the writer gives a brief history of the pioneer user of trucks in the wholesale hardware line, namely Hammacher, Schlemmer & Company, of New York. When it is considered that a large number of merchants today are still groping in the dark in regard to the use of commercial cars, still believing that these are not applicable to their work, it is a pleasure to mention the above company, who eleven years ago realized that motor driven vehicles were an economic necessity: that they were eventually to prove the most efficient method of transporting goods, and had the courage of their convictions to the extent of purchasing electric commercial cars as early as 1902. G. V. electric trucks were selected, and have been used and the fleet increased ever since that date until at the present time this company is using one 1-ton, one 2-ton, and four 3½-ton G. V.'s.

One of these pioneer trucks known to the company as No. 7, is herewith illustrated. This is a 3½-ton vehicle, which has seen nine years of continuous service, having been purchased in December, 1904. This vehicle is being disposed of and a new 2-ton G. V. has been ordered to take its place. Some time ago the first truck, which was put in service September 20, 1902, was sold after eight years of continuous service.

Impossible to Carry on Business as Now Without Trucks

The record of all of these vehicles has been most satisfactory. Mr. Acher, who has had supervision of these vehicles, makes the statement that considering the work which these cars have actually accomplished, they are cheaper than horses. He said: "We figure that each truck does the work of two 2-horse trucks, but it is very difficult to compare them as we really could not now do our work with horses. It would be impossible to carry on our business as we now are doing it if we had to give up trucks."

What the Trucks Are Doing

A large part of the work of these vehicles is the delivering of all kinds of hardware from small 1-lb. packages to 600-lb. cases to contractors, manufacturers, and the private trade. These electrics make anywhere from forty to sixty deliveries on a single route, and travel in a radius of approximately 25 to 35 miles from the store, thus covering the entire city of New York. They also go to Long Island City, Brooklyn, Jersey City and Hoboken. The horses have gradually been dispensed with, though the company is now using four horse wagons. These are employed in the dock service, where delays due to slow moving horse traffic are too great to permit of the economical use of the motor-driven vehicles. Horses are also used for a pick-up service for the merchants in the center of the city, to deliver small orders of tools, etc., and to fill out and complete larger orders. These may be called special deliveries, within a radius of two to three miles of the store.

Since the introduction of the first electric in 1902 the number of horse vehicles has gradually been decreased and the autos increased.

Drivers Are Old Horsemen

All of the commercial car drivers are old horse drivers with the company, as these men proved to be the most satisfactory. They are responsible for the general appearance of the vehicle, for the oiling, keeping the signs clean, etc. They are paid better wages, have shorter hours, and are very much better satisfied driving the motor vehicles. The attitude of these men was clearly shown by one in particular who was a great horse lover. He said: "I am looking for more money and better hours." Instead of making trouble at the introduction of motors and the disposal of his old friends, the horses, he took hold of one of the motor trucks, and has shown the same care and pride in this vehicle that he did when driving horses.

The company maintains its own garage at 130 East Twelfth Street, the building having been erected for this purpose and fitted with all modern conveniences, part of same being rented for office use, which of course would have been entirely impossible were the lower part of the building devoted exclusively to horses. The engineer in charge of the store building is also in charge of the garage, the care of the batteries and the mechanical details are all referred to him, the drivers reporting each night anything which is wrong. Lead batteries are used in practically all the cars, but an Edison battery has been used for the past year and thoroughly tested, and the new 2-ton vehicle will be equipped with them.

Cost of Operating Vehicles in This Service

An accurate record is kept of each truck separately. This is done by a card system. Every item is recorded, and it is interesting to note that this company after eleven years' experience has placed depreciation on the electric vehicle at 12½ per cent. The average cost per day of these vehicles has been carefully figured out on a basis of 25 days per month operation, or 300 days per year. These are for a 3½-ton unit. The figures include original investment, insurance at 8 per cent., interest 6 per cent., driver,

Fleet of G. V.'s in Hardware Delivery
Hammacher, Schlemmer & Company, of New York, began in 1902 with a G. V. electric and have gradually increased the fleet

The experience of this company has been very satisfactory, the trucks operating winter and summer alike.

New York Firm Used Packard Three Years

As an example of a wholesale hardware dealer who has found a single truck to be of great advantage, the Mosbach Hardware Company, 82-84 Warren Street, New York City, may be mentioned. This company has been using a 3-ton Packard for about three years. The driver as in so many instances is an old horse man, who has been with the company for twelve years. His employer sent him to the Y. M. C. A. school where he took the complete course, and with his practical experience has turned out to be a very valuable man. The machine is used in what might be termed hardware delivery to retail stores in and around New York City.

Truck Increased Outside Trade

Horses were formerly used but have been dropped as the truck is able to handle the delivery, with the exception of two horse teams which handle goods to and from the docks and very short hauls. The horses also go to the wharves to help out on carloads which it would take too long to transport. The truck goes anywhere from ten to fifteen miles outside of the city in all directions.

No mechanical troubles of importance have been experienced. What few repairs or replacements have been necessary have been by the Packard Service Company, in Long Island. The grumbling which the driver used to make about long hours, etc., is never heard now, the truck going out anywhere from 7 to 9 in the morning, taking its load, the deliveries all of which are laid out beforehand, and the driver does not have to return to the store. As soon as the deliveries are completed he is free to put up the vehicle and go home, which is always very much earlier in the day than with the horses. The truck is garaged at an outside establishment.

One day in the week the driver has a short haul. The half day is then employed in going over the truck, making adjustments, and in seeing that everything is in first class shape, thus the vehicle is systematically inspected every week, and troubles are prevented. No difficulty has been experienced in delivering during the winter.

Truck No. ..... Driver ..... **F. N. DU BOIS & CO.** Date .....

Motor Truck Service, Daily Performance Sheet

LEFT FACTORY A. M.	No. OF DELIVERIES AND DESTINATION	MINUTES DELAYED AND CAUSE	ARRIVED FACTORY A. M.	OIL USED QUARTS	Gasolene Used Gallons	MILEAGE DAILY
P. M.			P. M.			MILEAGE TOTAL

Daily Performance Sheet

Accurate record is kept in this way of every item of cost and transfered to monthly reports

CHAUFFEUR DAILY REPORT

Auto No. 1 Jan 27 1913

GASOLINE Gallons	OIL Quarts	GREASE Lbs.	Speedometre Miles Total	
9	0		5575	39

Repairs:

W Hook
Chauffeur.

Drivers' Daily Report

Above form is used by Thomas W. Riley & Company

Rapid Loading of Heavy Hardware

Electric overhead crane used by Fairbanks Company, New York

Fairbanks Company Using Three Trucks

About two years ago the Fairbanks Company, Brown and Lafayette Streets, New York City, a wholesale hardware, contractors' and engineering supply house, purchased a 3-ton Packard which has been in constant service since that time, practically without interruption. About a year ago two Gramm trucks were purchased and put into service. These vehicles deliver scales, wheelbarrows, hand trucks, and all sorts of heavy hardware to all points within the city and Bronx Park. The vehicles average about thirty stops per trip. They leave at a quarter of 8 in the morning, and are usually back at 3; are then sent on a shorter trip of from fifteen to twenty stops, as far north as Fifty-ninth Street, each vehicle thus making two trips a day.

The drivers are required to keep everything in adjustment, the vehicles being cared for at the Twelfth Street garage. Special repairs or replacements are cared for by the Packard Service, or by the Gramm people. The driver in charge has had nine years' experience in driving commercial cars. The machines are never overloaded, hardly ever getting over two tons. They have run just the same winter and summer, and are overhauled and painted during the middle of the summer. The drivers receive $20 per week, and look after collections, C. O. D.'s, etc. A few horses are also used. When asked if a comparison of the trucks with horses could be made, the man in charge immediately said that it would be impossible for the horses to do the work now being taken care of by the trucks.

Loading is done when heavy apparatus is to be handled by overhead trolley and Yale and Towne electric hoists, as shown in the accompanying illustration. The large truck has a record of never having been laid up unexpectedly since it has been in service, operating in the neighborhood of 300 days each year.

Du Bois Hardware Truck
Used in Green Bay, N. Y.

F. N. Du Bois & Company Operate Three G.M.C. Trucks in New York City

boy helper, garaging, current, battery, tires, supplies, repairs, etc., and works out at $12.48 per day, which appears to the writer to be a very fair average for this class of truck in this work.

Another satisfied user is F. N. Du Bois & Company, 247 Ninth Avenue. The goods handled are plumbers' supplies and hardware pertaining to this line. The company is now using three 3½-ton G. M. C. trucks. Two of these have been in service about a year, and the other was purchased about two years ago. Each of these trucks does the work of two double teams, and a comparison of costs can be had from the following statement by Mr. Blauvelt: "Two double teams would cost us $15, if hired outside as was our custom before we purchased the trucks. In fact, during rush season we still occasionally hire outside hauling. These teams could only make one trip a day each, the autos usually making two trips. The average cost of operating the 3½-ton trucks covering a period of over a year, the figures including every item that could be legitimately charged to them, is $11 per day, as against $15 per day as the cost of doing the same work by contract with outside teamsters. Of course," said Mr. Blauvelt, "I don't want you to think I am over enthusiastic about trucks, but we believe trucks are a good thing. Occasionally, there are repair bills which are fairly heavy, but other months there are none. Of course, when a horse breaks his leg, he has to be shot and that is all there is to it, but with the truck it is different, it can be put in shape again."

Deliveries are made directly to jobs or building operations. Each of the vehicles carries during the day from four to five tons, and during rush season have carried as high as 27,000 lbs. The drivers, two of whom were obtained from the G. M. C., and one an old horse man, help to load and unload, and as a rule do not have helpers.

Thomas W. Kiley Systematically Overloads

Thomas W. Kiley, of Brooklyn, finds commercial vehicles indispensable in hauling steel, iron, heavy hardware and contractors' supplies. He takes the rather unusual stand that it is economy to systematically overload the trucks. He is now using three auto trucks and eight horse trucks. Two of the motor-driven vehicles are Velie 3-ton trucks, while one is a Federal. At the very beginning after consulting with the makers he arranged to have the trucks fitted with 5-ton tires. Extra overload springs were placed underneath the rear of the body in a crosswise position over the rear axle, with the intention of placing four tons on these 3-ton trucks. This practice has been followed now since the trucks were installed, and he claims to be getting excellent service from the vehicles. Four tons are carried practically every load.

Dienst Truck Loading
This firm, another pioneer hardware truck user, employs up-to-date loading methods

The trucks have been operated continuously in this unusually heavy service, and Mr. Kiley says that they have brought in a large amount of business in the Bronx and the Island, and are carrying for many long hauls which formerly had to be shipped by freight, which was not altogether satisfactory to his customers. The stock consists of channels, plates, round and square bars, and other heavy hardware and contractors' supplies. A large stockhouse is maintained, arranged somewhat similar to lumber sheds, with passageways through the center above which are placed overhead trolleys fitted with Yale and Towne 2-ton electric hoists.

Packard, Used by Simmons
This company is gradually displacing horses in its branches in several cities

Special Body Designed by Kiley

Owing to the nature of the material to be carried, it was found that special bodies were a necessity, and these were designed by Mr. Kiley following the type found by experience to be the most serviceable on the horse trucks. This body gives 16 ft. of loading space behind the seat, and is 64 in. wide, so that it will take a 5 ft. plate of steel flat on the bottom. At the rear of the driver's seat the body is heavily armored so as to withstand the attack of the ends of the rods and plates as they are swung on to the vehicle. A simple but novel arrangement has been provided for excessively long pieces which very often have to be carried. The upper edge of the front end of the body consists of a heavy steel channel into which holes are drilled so that vertical iron pins can be inserted. Long steel rods and other pieces are then allowed to rest on the back end of the body and upon this steel channel, the vertical pins keeping the pieces where they belong, while the front ends of the rods stick out even as far front as the radiator.

In regard to his drivers, Mr. Kiley said that he had placed his own private chauffeur in charge of the trucks. The vehicles were at first kept in an outside garage, but owing to this garage having discontinued, he was forced to house them himself, and finally found that the stockhouse, which was simply filled with non-inflammable materials as iron and steel, and in which there was plenty of room, answered the purpose very well as a garage, so that on this item alone considerable saving has been effected.

Tracks Show Superiority in Winter

The trucks are completely overhauled once a year, this taking place in the fall, to put them in first class condition for the heavy duty imposed upon them during the winter months. When asked how they got along in the winter, Mr. Kiley said that was the time when they showed their great superiority over horses, the trucks running almost regularly when horses couldn't get through the snow at all. This led up to a comparison of the cost, upon which Mr. Kiley had the following to say: "The trucks have paid me well and I am very much pleased and satisfied. A team of horses costs me about $7 per day, including everything." The trucks I find after having kept most accurate records are operating for about $13 per day, which includes a helper, but, of course, one truck does fully the work of two and sometimes more teams. For instance, when hauling to Jamaica horses can only make one trip, and can hardly

Old No. 7 G. V. Truck
This truck has seen nine years of continuous service by Hammacher, Schlemmer & Company, and is now being replaced by a new G. V.

Side-Curtained Autocar, in Use by the Well-Known Simmons Hardware Company, of Philadelphia

Knox 3-Ton Truck of the Charles C. Lowis Company, Springfield, Mass. Three Years of Continuous Service in its Record

G. V. Electric 1½-Ton, Used by Trimont Manufacturing Company, Roxbury, Mass., Makers of "Trimo" Tools

An Adams Model D 1½-Ton Truck, Used by Rowe & Conover, Newark, N. J. Note the Method of Carrying the Long Pipes, and the Side Extensions of the Body

Avery Truck of the Isaac Walker Hardware Company, Ready for Delivery

One of the 2-Ton G. V. Electrics Used by Hammacher, Schlemmer & Company, New York, for Hardware Delivery

A Kelly 1-Ton Truck, Loaded, Ready for Delivery, by Huey & Philip Hardware Company, Dallas, Tex.

A Small Waverley Electric Used by Lilly & Stalnaker Hardware Company Carrying a Load of Screens

Trucks of Well-Known Makes, Used in Hardware Business

do that with 3½ tons, and then they have to be laid up the next day. With a truck two trips can be made with fully four tons on each time. Trips which used to be a day's work for a horse they can now send a truck on early in the morning, and the truck is back by 10.30 the same morning, ready for anything to be done. "Even if the machines cost as much as horses," said Mr. Kiley, "they would be better owing to the service which they give to our customers."

Cost of Operation Covering a Year

Original Investment,	$4500
Interest at 6 per cent.	
Depreciation, 20 per cent.	
Tires, 6 cents per mile.	
Driver, $18 per week.	
Helper, $12 per week.	
Sundries, $100.	
Oil, (20 miles to the qt. or about 4 gals. a week) 30c. a gal.	
Gasoline, 5 miles to the gal. 50 miles a day.	
Total,	$34,000

These are the items which are taken into consideration, and the total is from actual cost figures covering a period of a year.

It is interesting to note that even in this most strenuous service where the trucks are intentionally overloaded to the extent of 2000 lbs. almost every trip, it has been found that they will in all probability last five years, and the depreciation has therefore been placed at 20 per cent.

The cost of the horses is as follows:

Two teams, truck and harness, $3,000.	
Board of horses at 80c. each.	
Stable rent, $20 per month.	
Shoeing, $30 per horse per year.	
Driver, $16.	
Depreciation, 10 per cent.	
Interest, 6 per cent.	
Total,	$3,470

From the foregoing it will be seen that the average cost of doing this work is about the same by horse or truck, except that on the long haul work with heavy loads the horses are not sent over the bridges as the stiff inclines have an appreciable effect upon them. They are therefore sent by the ferries, which takes considerably longer and costs more.

Reports

In connection with this article we reproduce the chauffeur's daily report card, which shows the gasoline and oil, grease, etc., used and the miles traveled. This latter item is from 30 to 50 per day. Detailed reports are kept and copied on to a monthly sheet, so that the actual cost is not a matter of conjecture.

The success which Mr. Kiley is having with these trucks in spite of the tremendous loads which he is carrying shows what can be done with such vehicles if they are carefully watched, and breaks prevented by adjustments or replacements in time.

Marshall-Wells Hardware Truck Cost Compared With Horse Haulage

The Marshall-Wells Hardware Company, of Portland, Ore., not only uses motor trucks successfully but has solved the difficult driver problem by adopting the bonus system. In addition to the regular wages of drivers, the company credits them with $10 per month if they keep the trucks out of the shop and this bonus is payable to the drivers at the end of the year if they remain with the company.

The equipment of the company consists of five White trucks, one of 1500 lbs. capacity, three of 3000 lbs. capacity and one of three tons. The trucks have been in service since the spring of 1911 and are distributed between the offices of the company in Portland and Spokane.

The company no longer makes detailed records of the cost of operation and maintenance, having adopted a schedule of definite charges which are made against each piece of equipment, according to the costs shown in the first year of operation. These fixed charges covering everything but fuel and the amount of each charge has a sufficient margin to establish a reserve. Their figures show the following comparisons between the cost of light and heavy wagons and light and heavy duty trucks:

Light Two-horse Wagon

Feed, shoeing and veterinary	$45.00
Interest and taxes on inv.	5.00
Depreciation	14.00
Driver	45.00
Painting	4.00
Repairs	5.00
	118.50

Heavy Team Wagon

Feed, shoeing and veterinary	$50.00
Interest and taxes on inv.	8.00
Depreciation	20.00
Driver	71.50
Painting	5.00
Repairs	10.00
	164.50

One and a Half Ton Truck

Gasoline, Oil, etc.	$20.00
Interest and taxes on inv.	22.66
Depreciation	55.00
Driver	65.00
Painting	5.00
Tires and repairs	50.00
	217.66

Three-Ton Truck

Gasoline, oil, etc.	$25.00
Interest and taxes on inv.	27.00
Depreciation	67.00
Driver	65.00
Painting	5.00
Repairs and tires	50.00
Helper	52.00
	292.50

Comparative Costs Per Mile

Light wagon:	
Average miles per day	12
Cost per mile	45c.
Heavy team wagon:	
Average miles per day	10
Average cost per mile	64c.
1½ ton truck:	
Average miles per day	35.4
Average cost per mile	23½c.
3 ton truck:	
Average miles per day	30.5
Average cost per mile	36½c.

It must be borne in mind that these figures and comparisons reflect the conditions that are peculiar to this particular company. The higher cost per mile attributed to the 3-ton truck is due to the fact that the total waiting time cuts down the mileage and does not permit taking full advantage of load mile capacity. Furthermore, the 3-ton truck bears the wage of a helper which is not carried against the heavy wagon. The smaller motor truck also is kept in some restraint, 35 miles hardly making up a day's work unless delivery conditions compel such a limit. If it can be assumed that the trucks carry their rated load on such trip, the figures show that the 1½-ton truck hauls goods at approximately 15 cents per ton mile and that the 3-ton truck costs 12.1 per ton mile. Undoubtedly both of these figures could be improved by the reduction of idle time and a corresponding increase in mileage.

Kiley's Trucks
These three-ton trucks were fitted with five-ton tires and made to carry four-ton loads

MURTA-APPLETON COMPANY

Another Philadelphia firm uses a White truck of 2000 lbs. capacity. This machine has been in service now for about a year by Murta, Appleton & Company, and has covered upwards of 10,000 miles.

It is giving excellent service under the present driver, who is the second one who has handled the truck. The first was a converted teamster who apparently thought he was getting back too early and had better loaf a while. The firm soon found that the work which was laid out for the truck was piling up and investigation proved that the driver was loafing on the job. With the new man it is covering in the neighborhood of

fifty miles a day, averaging anywhere from 35 to 40 stops.

The vehicle is inspected one-half day each month by the service department of the White Company, and thus far has not been overhauled. The driver looks after minor adjustments and repairs, the truck being cared for at a public garage.

As to cost of operation compared with former methods of doing this same work, the statement was made that the truck costs about 50 per cent. more than a double team. This, if in New York, would mean that the truck was rather expensive, but in Philadelphia a wagon and driver can be had for $20 a week. The machine is capable of doing the work of two teams or slightly more if worked up to its capacity all the time. This is not the case in this particular instance, so that the cost of what it does do is about the same as it would be with horses. However, there are many other features to be considered, and the statement was made that the company could afford to charge off fully $500 a year owing to the satisfaction which the quicker delivery was giving to the customers.

Another Pioneer User

The Simmons Hardware Company, 1221 Arch Street, Philadelphia, formerly with headquarters in New York, is another of the early users, their trucks being used in and around New York as early as 1906. Motor driven vehicles are used by them in the various cities, only two, however, being operated in Philadelphia. One of these trucks is an Autocar, which was purchased last September after having been operated for six months on a rental basis from the Autocar Company. The other machine is a small Studebaker gas delivery wagon, which was purchased in June, 1913. The limit of its carrying capacity is about 700 lbs. These cars are being used for special delivery work, also for picking up in the city. Deliveries are also within city limits. Wagons are still used to and from the wharves and through the shipping districts where waiting time handicaps the trucks.

The cars are giving excellent service, the Autocar driver being taken from the Autocar Service Company, while the Studebaker is driven by a young man whose father is in the automobile business, and who is more or less an expert. At the present time the car is garaged at his father's place, while the Autocar is taken care of at the Autocar Service Station. The trucks are kept extremely busy, both winter and summer, the drivers having all they can do to keep up with the deliveries. The vehicles average from 60 to 70 stops a day, and have been kept going continuously during the past winter without trouble.

The Simmons Hardware Company is very systematic, keeping actual cost records of every item of expense, and make the statement that for city deliveries, such as they are using these vehicles for, it would cost them doubly as much to do the same work by horses.

Truck Used in Hardware Business

This is a four-ton Universal, used by Buhl Sons Company, Wholesale Hardware Men, of Detroit, Mich.

EXPERIENCE OF A DETROIT CONCERN

Buhl Sons Company, Detroit, Mich., rated among the largest wholesale hardware and iron and steel dealers in that section of the country, use motor trucks in connection with their city delivery to the retail and factory trade. With them motor trucks have become a fixture not so much through any great saving effected as because in this manner they are able to give their patrons service which would otherwise be impossible. Two four-ton and several one-ton machines are employed. Interest, however, centers in the heavy trucks because the class of material they handle is of a particularly wide range and makes the demands somewhat unusual.

Buhl Sons Company handles everything from carpet tacks to bar iron. With a truck it is therefore a case of carrying capacity and making good time on the road. To show what is accomplished in this manner the performance of a four ton Universal truck is given as an example. All the trucks run on a rigid schedule. They leave the warehouse at a given time and the shipping department knows exactly where they are while out. Time of departure is set for 7.30 A. M. and 1.30 P. M. The best part of an hour is required in loading, owing to the miscellaneous character of the cargo. For example, it may be a case of picking up bar iron or sheet steel at one loading dock, afterward visiting other departments in succession, as the load is built up. Because of this varied assortment it is impossible to load everything at one point, hence the extra time required.

As many men as can be used to advantage—sometimes half a dozen—are employed in loading, to save all possible time. When a truck starts out with its four-ton load—the shipping department makes it a point to seldom send it away with any less, and often much more—it may be scheduled for twenty or thirty stops before its return, mills, factories and stores along the way being served.

The average daily mileage for this truck is approximately fifty. Because of the long runs involved and the frequent stops necessitated, it has been found impracticable to have the heavy trucks make more than two trips a day each. Gasoline consumption runs from ten to fifteen gallons per day, twelve being the average. In considering fuel consumption account must be taken of the frequent stops and the heavy hauling demands.

Two men go with the truck—a driver and assistant—who handle the unloading. It has been found that, figuring all the legitimate charges, including fuel, repairs, labor, depreciation, etc., the average cost of operating a truck is $15 a day.

"No doubt that figure will be challenged as too high," said Traffic Manager Nichols. "When I say that it costs $15 per day I am taking into account every item that could be figured as a legitimate charge—for that is the way we believe in doing business. We have no fault to find on that basis, for we are enabled to give our customers a service which would otherwise be impossible. With us it is a case of getting the goods out to the trade. If our stock was less varied we might effect a saving in the time devoted to loading and unloading, which would reduce the expense a trifle."

The trucks are used only in making deliveries to the trade. At first an attempt was made to utilize them at freight terminals, but it was found that so much time was lost waiting for a chance to get to the docks that they would prove not only less expensive but more satisfactory in making deliveries.

Buhl Sons Company use a four-ton Universal, a four-ton Reliance and three one-ton Federal trucks, in addition to their other equipment.

The Republic Truck—One Model Only

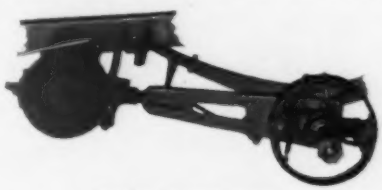
THE Republic motor truck, which the Alma Motor Truck Company, of Alma, Mich., is manufacturing, is built entirely of standard units. It was the object of the manufacturers in producing this truck to use in its construction only such standard units as had been proven, by long and satisfactory service on other commercial cars, to be the best of their kind on the market. Possibly one of the strongest features, and the most important from the buyer's standpoint, is the fact that everyone of the units used in the construction is from 50 to 100 per cent. over-sized. The assembly details have been carefully worked out. The radiator is suspended from the side members of the frame by double coil springs, making it entirely free, so that it is able to assume any position it may be called upon from the racking of the truck frame due to road shocks, etc. The spring suspension of the radiator is essential, in order to obtain satisfactory results from this member, because when the radiator is fastened rigidly to the side members of the frame the vibration is such as to very quickly crack the soldered joints, thus causing it to leak.

The cooling of the motor, which is a 4-cylinder Continental model "C," 3¾ x 5¼ in., is obtained by a high power centrifugal pump, located on the right side of the motor. Ignition is effected by an Eisemann high tension magneto of the fixed spark type. The Schebler Model "L" 1¼-in. carburetor is used. The motor is suspended from a subframe at four points, the clutch mechanism together with the center control set being also suspended on this same subframe and back of the motor.

The clutch is of the Hartford leather-faced cone type, and an efficient clutch brake is provided to prevent the spinning of the clutch and resultant difficulty in shifting the gears. Universal joints, of which there are two, are also of the Hartford type. Drive from the motor to the transmission is of the straight line type, the center line of the motor crankshaft being exactly in line with the center line of the transmission, and also of the jackshaft to which the transmission is attached. By making the drive perfectly straight the action of the universal joints is minimized. The transmission is Covert Model "G I," three speeds forward and reverse. It is made up in unit with the jackshaft manufactured by the Russell Motor Axle Company. The jackshaft is suspended from the main frame of the truck by means of bell-shaped brackets. The bearing for the forward end of the radius rod is carried on these brackets, so that the thrust strain does not in any way come on the jackshaft proper.

Drive from the jackshaft to rear wheels is accomplished by means of 1¼ x ⅝ x ¾-in. detachable link chain, manufactured by the Culver-Taylor Chain Company. The truck is equipped with two sets of brakes. The service brake is 10 in. in diameter, of the contracting type, and is located on the jackshaft. The emergency is a 14-in. internal expanding brake and is located on the rear wheels. Radius rod construction is of full universal type so that any road strains are entirely compensated by its universal action. The spring suspension is semi-elliptic, both front and rear. The rear springs are outside of the frame, and the frame hung between them. This method of suspension produces an extremely low loading height, and at the same time a wide spring center. Front springs are 2¼ x 38 in., and the rear springs 2¼ x 46 in., and are made of the highest grade of carbon spring steel obtainable.

Republic Truck Fitted With Express Body



Brake Construction

Service brakes on end of jack shafts; emergency on rear wheel drums. Note the heavy, swiveled radius rods.

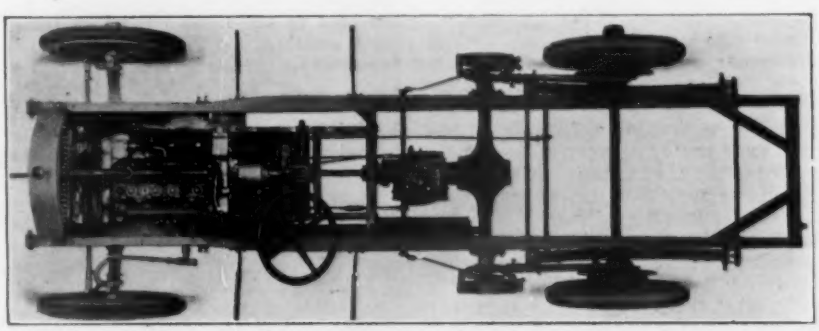
Both front and rear wheels are mounted on Bower roller bearings. Front spindles are 1¾ in. and rear spindles 2 in. in diameter. The wheels are equipped with 34 x 3½-in. tires in front and 34 x 4-in. tires in rear.

Left-hand drive and center control, with foot accelerator, are used.

There is neither a throttle or spark control on steering column, all of the work being done by means of a single accelerator pedal on the floor board. The accelerator pedal is of the graduated type so that the foot of the operator is at all times on the floor board.

The truck is supplied in 116-in. wheelbase, and 124 in. is furnished special if specified. Standard equipment is stake or flare board express body. Either of these bodies is furnished with the truck at the list price of $1425. A large number of special types of bodies are listed, and bodies of any sort are built to the buyer's specifications. The equipment of the manufacturers' body shop is such that special bodies can be produced promptly and at a reasonable price, and as the demands of the commercial car business is in many instances for special bodies, this is a most important matter.

The manufacturers of the truck will manufacture nothing but the one model, as they feel that by specializing on this one model and producing in quantities a much better car can be offered to the public because of this large production than if the attempt was made to manufacture several different sizes of trucks.

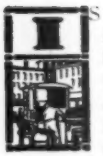


Top View of Chassis

Motor and clutch are suspended on subframe; transmission and jack shaft are a unit

The Commercial Car in Laundry Service

By CHARLES B. HAYWARD



IS the commercial car a paying investment in the laundry business? It is. Unfortunately, the proprietors and managers of many laundries, large and small, do not regard the question as admitting of such an easy and altogether conclusive answer. They disagree with that brief "It is"; some of them strenuously, others are not quite as decided in the negative shading of their views, still others are half-heartedly on the defensive, and there are more who are willing to confess their entire ignorance of the subject, while admitting that it doubtless has great possibilities—for other lines of business.

"Conditions in our business are not the same. Stops are so frequent that on congested city routes the car cannot make any better time than the horse." This is one of the conditions that some laundry owners regard as being "peculiar" to their particular line of business. Probably if some of them realized how many times that had been said in all seriousness during the past ten years, they would not unconsciously continue to perpetrate the joke. It was about a decade ago that the traffic managers of the department stores crystallized it for the benefit of the men who were trying to get them to introduce electric delivery wagons on their local routes. Is there a department store to-day worthy of the name, that has not motorized its delivery equipment to a very large extent? In a very few years there will be scarcely any in the larger cities that employ horses at all. Wherever the opportunity offers, as in the opening of a new store or the establishment of a branch in another city, horses are not considered at all and the entire equipment consists of commercial cars.

Whether coming to a stop or restarting, the speed of the commercial car is superior to that of the horse. This is more particularly true of its ability to accelerate, so that apart from its greater traveling ability when under way, it has this further advantage as a time saver where frequent stops are necessary.

Conditions of Service

In one sense, at least, delivery conditions of the laundry business are out of the ordinary. There isn't enough delivery work to do to keep one or two cars busy all the time. Of course, there are large establishments which find it necessary to keep three or four one or two-ton trucks going all the time to maintain their service, but these are exceptions. On the other hand, there are a great many laundries doing a flourishing business which require two or three one or two-horse wagons. But when the horses and wagons are replaced by commercial cars the latter get over the same ground so much more rapidly that they are necessarily idle part of the time and are accordingly not considered as being particularly economical.

Truck Displaces Driver, Two Wagons and Four Horses

The following instance among others will be found to illustrate conditions of exactly this nature. For example, the Grand Laundry Company, St. Louis, displaced four horses, two wagons and one driver by one White 1500-lb. gasoline car at the opening of the present year. The average daily mileage is 50, and for 50 per cent. more of that distance the car carries its normal full load. To quote H. H. Guyn, the vice-president and manager of the company: "We have displaced four horses, one driver and two wagons. The truck costs about $1.50 per day to run, independent of the expense of tires and the wages of the driver, who formerly drove one of the two-horse wagons and receives the same wages as formerly. Our truck is used for hotel, restaurant and relay work. Cannot see any great economy in truck as we use it, except better service. If we had work to keep the truck going constantly, it would show fine economy." The significance of this will be referred to at greater length later on.

White, in Service of the Grand Laundry

Truck in Express Delivery Displaces Five Horses

The Monarch Laundry Company, New Haven, Conn., affords the second instance. "The only machine that we have any complete data on is our White 1500-lb. delivery wagon, which has been in service two years," says C. M. Dobbs, the secretary and treasurer of the company. "Taking everything into consideration, such as interest on investment, depreciation, tires, oil and repairs, it has cost us 15 cents for every mile covered, not counting the chauffeur's wages. As it is doing a peculiar service other than the regular laundry delivery, it is rather hard to make a comparison. In fact, it is doing general express work running to nearby towns, and while doing this work takes the place of five horses. At different times we have tried it on our city routes, but as they are so congested, making it necessary to start and stop quite frequently, it cannot make any better time than a horse. Although the cost per mile has not been figured out on this particular work, we have been obliged to consider the same average cost of 15 cents. Our average daily mileage is about 40, average load about 1000 lbs., though we have quite frequently carried 2000 lbs. Our tires are 35 x 5-in. U. S. Nobby tread, which, in some instances, have given us as much as 11,000 miles. I think the average we get from these tires is between five and six thousand miles."

It may be taken for granted that this motor truck provides much more prompt and satisfactory delivery service than would be possible with horses. Disregarding the value of that element as a business producer and keeper, the sole question is whether the motor truck can be operated more economically than the number of horses and wagons required to do its work. For purposes of comparison the entire service rendered by the truck may be considered in the light of delivery work. The truck replaces five horses, and at the same time totally eliminates the wages of at least one driver and the upkeep of one or two wagons. In other words, one commercial car with one driver does the work of five horses, two drivers and two wagons, to state it conservatively. It goes without saying that four horses and two wagons, allowing one horse in reserve, cannot cover forty miles a day at a cost of $6, which is what the motor truck expense figures out, less driver. There can be no wide variation possible between horse delivery service in this field and in other urban service in which the loads and distances average about the same, and it has usually been found that the cost has run from 20 to 25 cents per mile or more, increasing with the cost of stable and wagon storage room in high-priced rental districts.

Some instances that show that laundries generally are just entering upon the transition period mentioned and have not as yet accumulated sufficient experience with the commercial car to fully realize its value, are afforded by Pittsburgh and Cleveland establishments. In the case of the Barnes Laundry Company, Pittsburgh, a 1½-ton White truck has been in service nine months and a Ford delivery wagon about six months. Each car covers about 50 miles per day, the White averaging a load of close to a ton, while the load of the light car ranges from 100 to 500 lbs. Solid tires are employed on the truck, using the Motz cushion type on the front and the Goodrich dual on the rear, while the Ford is equipped with U. S. Nobby tread pneumatics. To quote A. C. Canfield, president and general manager of the company: "The two cars have displaced six horses, but we are not able to give you any figures as yet as to the economy

of using these machines. It will depend entirely on the condition of the cars at the end of the first year. We are now charging 20 per cent. depreciation, but are afraid that this is not enough, and if more than this is required we are of the opinion that they do not represent an economy over the use of horses."

With the exception of the one instance in which the use of a Ford delivery wagon is mentioned, it will be noted that the foregoing examples are drawn from laundry establishments serving hotels, restaurants and other large users of clean linen, loads of 1000 lbs. to a ton being common. While there are a great many laundries catering to this class of business and accordingly in a position to make good use of the half and one-ton trucks, there is a far greater number that cater directly to the individual user.

331 Stops in 31 Mile Route

Some typical instances of installations of this nature are to be found in Washington, D. C., and in the experience of one of them at least is to be found an adequate answer to the problem of frequent stops already referred to. This is the Star Laundry, which operates four "Little Giant" commercial cars made by the Chicago Pneumatic Tool Company. The delivery route of one of these cars may be regarded as typical of the service rendered. The distance is 31 miles, in which there are no less than 331 stops, the covering of this route once representing a day's work. While detailed figures are unfortunately not available, the following extract from an interview with the manager of the concern will shed more light on the success of the installation than any comparison of actual expenses between the trucks and horses possibly could. "Business has been increased, zones lengthened, promptness of delivery has not only made satisfied customers but has also aided the help by shortening their hours. Competition has in many instances been eliminated. Our deliveries have been hours ahead of all competitors and in one instance during a heavy snowfall last winter a competitor on the same route was two days behind in his deliveries. Each truck has taken the place of two horse-drawn wagons and has saved on the average four hours per day in covering the same routes. The financial saving, which was the original object of the installation, has been larger than at first estimated." One of the fleet of four delivery wagons operated by the Star Laundry is shown in the accompanying photograph.

From the far West comes an equally encouraging experience that throws considerable light on the value of the commercial car for laundry service. The Sedro-Wooley Laundry Company, Inc., Sedro-Wooley, Wash., writes: "We have run our Lippard-Stewart delivery wagon for seven and a half months, covering 9850 miles, all without a cent of expense, outside of tires and gasoline. This has all been on muddy roads and in a hilly country. The car has done the work of three two-horse teams, covering 16½ miles on a gallon of gasoline." A statement that throws light on the proper depreciation percentage was made: "We consider our Lippard-Stewart car in as good condition to-day as when we bought it." In displacing two wagons and six horses there is little question

Little Giant, Used by Washington, D. C., Laundry

but what this one car will pay for itself in two years or less, not to mention the more satisfactory service rendered. Whether for country or city service there seems to be but little doubt that 15 per cent. would amply cover the item of depreciation for the first year, and 10 per cent. for each succeeding year.

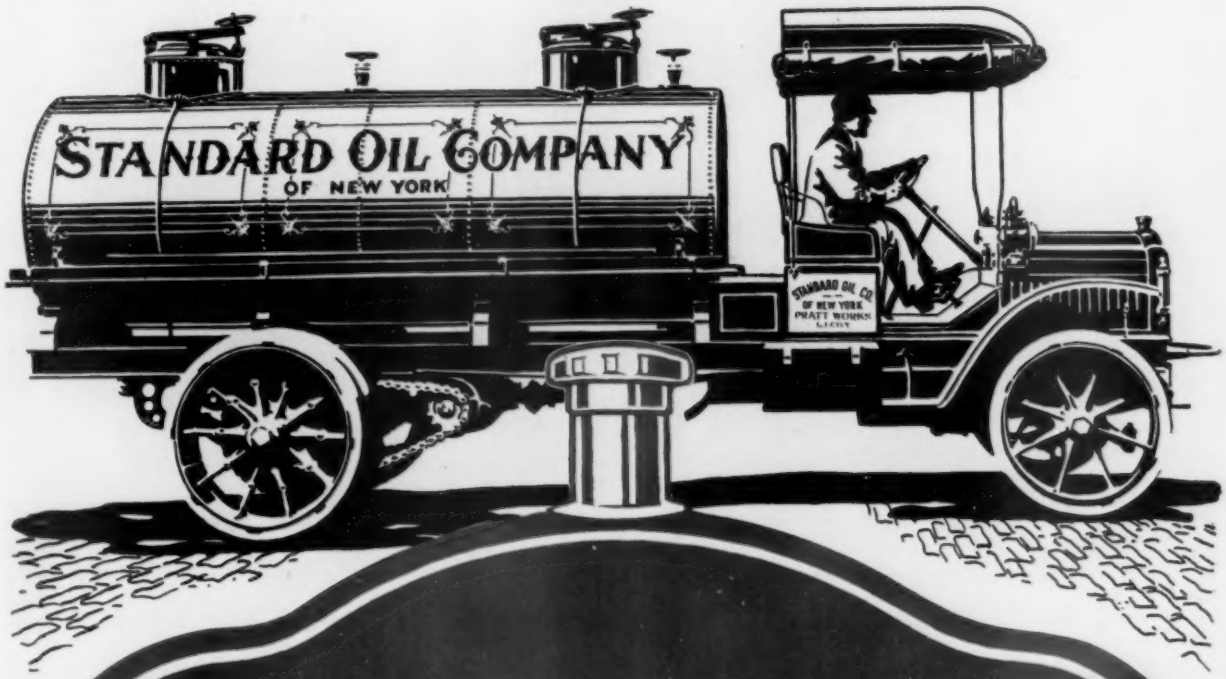
On the subject of economy the manager of Lewando's in Philadelphia in the course of an interview said: "We arrived at a point where we were compelled to cover the suburbs thoroughly or lose business, so we purchased an Autocar and it has solved the problem."

The demand for laundry service is greatest in residential districts, where people live and not where they work, and to be able to meet it there must be a quick and convenient means of going after it and delivering the finished product. This, of course, refers to what may be termed "retail" laundry business, or dealing directly with the consumer. But even in the case of those large establishments that cater to hotels, restaurants and the like, the principle applies, though not for the same reason. It is not necessary for laundries of this class to seek business in the suburbs, but to prosper, a concern cannot afford to stand still, it must grow. Growth means getting more business and to get it and keep it the first requisite is an effective method of handling deliveries and of soliciting business. The commercial car provides the opportunity to do both, and in the latter role, time that would otherwise not be utilized may be used to advantage. In adopting motor trucks a great many firms have used them at the outset solely for taking care of new business and this meant increasing the amount of new business as well.

Mention has already been made of the fact that as a field for the commercial car manufacturer, the laundry interests are comparatively far down on the list of relative importance. In view of this, the fact that two motor car manufacturers have supplied no less than 52 different establishments is significant. Still more so is the number of instances in which these same firms have placed repeat orders for cars. One Chicago laundry operates four 1500-lb. White trucks; three others in different parts of the country use two each of the same type, while half a dozen more are employing 1½-ton capacity trucks of the same make. Out of twenty-nine different dyeing and cleaning establishments and laundries that purchased Autocar trucks, no less than eleven, or close to 50 per cent., have placed repeat orders, conclusively demonstrating the successful results of their experience with the commercial car.

Lippard-Stewart Used by Washington Laundry

The Sedro-Woolley Steam Laundry, of Sedro-Woolley, Wash., has used this truck over a year with entire satisfaction. The truck does the work of three two-horse teams and has made as high as sixteen and a half miles on a gallon of gasoline.



A STANDARD BODY, PRICE COMPLETE, $1850. With Other Body Styles, $1775 to $1850

BROWN

COMMERCIAL CARS

Which will you have—a real commercial car or a pleasure car equipped with a commercial car body? There is a vast difference between them—not so much in appearance as in the service you get. It's a difference that touches your pocketbook nerve. If yours is a little sensitive, it behooves you to get the Brown—a real commercial car.

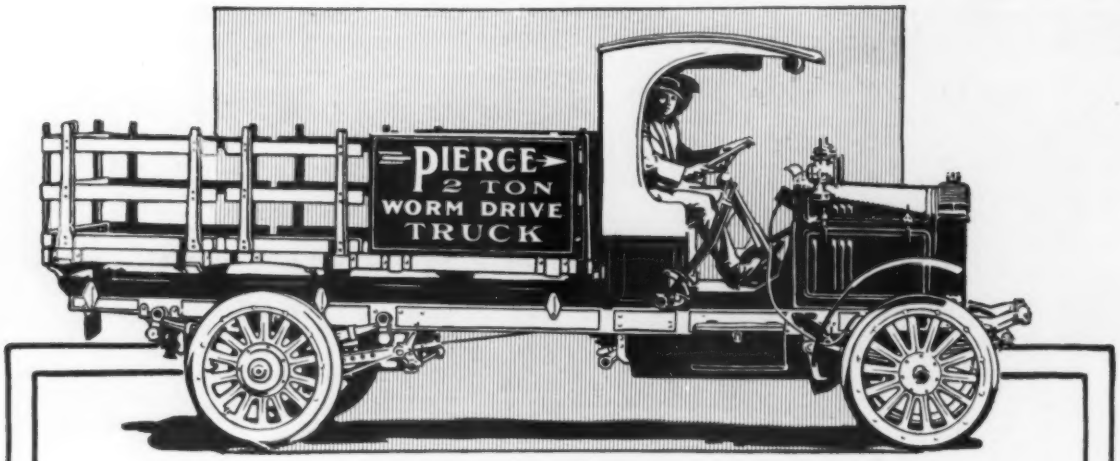
Every reason for the purchase of a real commercial car that appeals to the buyer appeals with even added force to the dealer. You must either handle such a car or compete with it, and it's a great deal easier and far more profitable to swim with the tide than to try to stem it. In the truck field the tide is running strongly for the greatest efficiency at the least cost, and that is why the Brown is in such high favor.

The Brown Commercial Car will stand the most searching investigation. Test it by its performance; by its construction, both of materials and design; by its cost of maintenance; by its ease of operation; by the service it gives, and you will find it a car that will prove its worth and value on every occasion. It's the kind of car that's a pleasure to sell, because you know the only kind of comeback you will have will be a call for more cars.

Live Agents who want to handle a commercial car that is a service giver and business builder should lose no time in investigating the Brown. We can prove to you that it has rich possibilities in your territory. Ask us about it today.

BROWN COMMERCIAL CAR CO.

PERU, INDIANA



We Announce

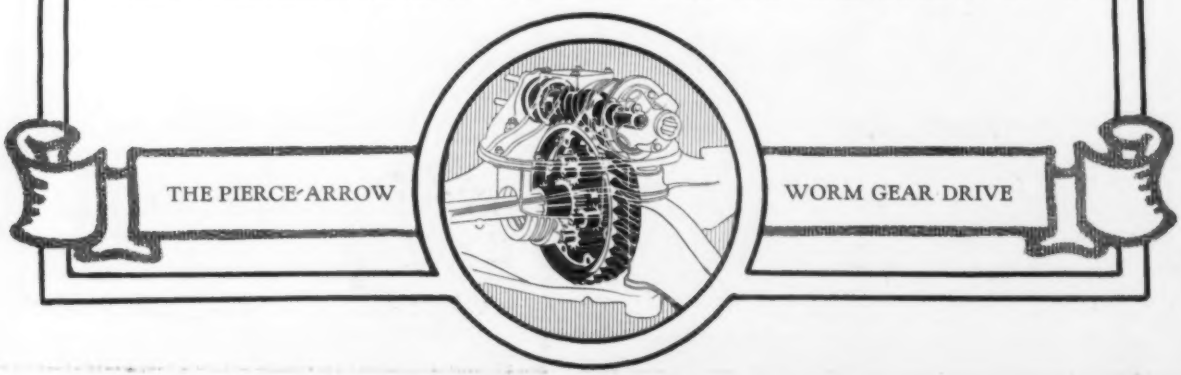
THE NEW PIERCE-ARROW 2-TON TRUCK

The new Pierce-Arrow 2-Ton Truck is now on the market. It is really a small edition of the 5-Ton Truck which has established itself in so many lines of industry by increasing efficiency and curtailing cost. Like its big brother the new model has the efficient worm gear drive which we were the first to apply to American commercial vehicles. Its design throughout is along exactly the same lines, allowing for the lighter burden, that have made for durability, economy and efficiency in the 5-Ton Truck.

A wonderful fertile field is opened up by this application of Pierce-Arrow dependability to 2-Ton conditions. There will always be traffic problems which can be best solved only by the 5-Ton Truck; there are other problems involving lighter loads which can now be best solved by the 2-Ton Truck.

Ask us whether your problem falls into either of these classes. If it does, you can make more deliveries in shorter time, fill your orders promptly and with satisfaction in all sorts of weather, and reduce your cost while you are giving this efficient service.

THE PIERCE-ARROW MOTOR CAR CO · BUFFALO · N · Y



Advertisers' Index

REPUBLIC TRUCK

Dealers Appreciate Merit

Any doubts of this that might have been entertained were dispelled by the volume and character of the response to the announcement of the REPUBLIC TRUCK. Its merit was firmly established in the minds of dealers by the mere reading of the list of parts used in its construction, for they were standard parts whose use proved beyond question that it was a quality truck, while the price showed it was unprecedented value.

Small wonder, indeed, that dealers of character, reputation and financial standing hastened to secure the agency for this truck. They realized it was a remarkable selling proposition—high quality at a low price. To them the slogan "Republic means Service" was more than a mere advertising phrase—it meant something they could definitely assure their customers.

Some choice pieces of territory are still open. If you are aggressive and looking for a money maker, carefully read over this list of parts, then the price, and you'll see why you should wire for the agency in your territory.

Continental Motor	Lavigne Steering Gear	Covert Transmission
Schebler Carburetor	Bower Roller Bearings	Lewis Springs
Eisemann Magneto	Hartford Joints and Clutch	Left-Hand Drive
Russel Jack Shaft	Culver-Taylor Chains	Center Control

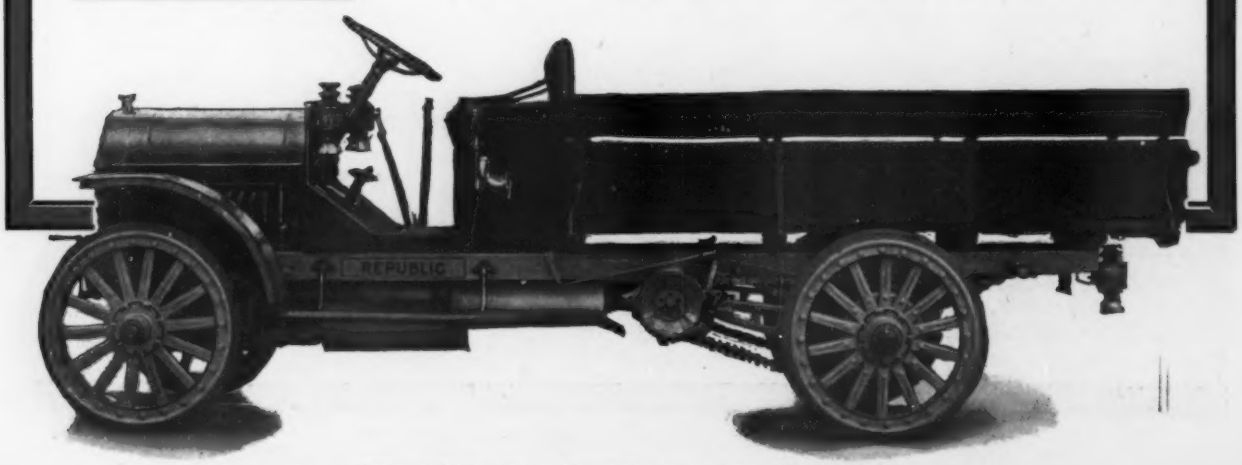
1500-2000 lb. Truck with Stake or Express Body $1425

DEALERS: When in Detroit telephone our Sales Office, G-4865. Our representative will call with truck.

ALMA MOTOR TRUCK CO.

Alma, Michigan

GENERAL SALES OFFICES: Detroit, Mich. Address either point



A Bowser Storage System Has All The Security Of A Burglar And Fireproof Bank

When you acquire money, stocks, bonds, notes or other securities, you don't let them lie around loose, but put them in a safe place. They are ***the motive power*** of your financial business and you can't afford to lose even the smallest fraction of their value.

News items tell daily of the loss of such wealth by fire, theft or mysterious disappearance and you pity the losers, whose misguided judgment would not let them store their money or securities in a safe place.

Yet, strange to say, many who would thus pity have invested huge sums of money in motor trucks, garages and equipment, but refuse to store the motive power of ***that*** business in a safe place.

Some men who would demand an instant investigation if they lost 2% of their financial motive power will unconcernedly let 20% of their **vehicular motive power** be lost through surface storage and do nothing to correct it.

Are you one of them? If so, be logical! Apply to the storage of your gasolene and oil the same precautions you would to your money. Put them where they are safe from fire, theft and disappearance! Give them all the security of a burglar and fireproof bank! Put these valuable and all-important liquids in a

Bowser Safe Oil Storage System

With it your gasolene and oil are stored in a safe deposit vault under the ground, where they cannot evaporate or escape, where fire cannot reach them, where changing temperature cannot affect them, where impurities cannot defile them, where they preserve their full strength until used and where they are always instantly available.

You transfer it as needed ***direct*** to your car without exposure to the air by a self-measuring pump. Nothing is lost in transference and you know where every gallon—nay, every drop—you pay for goes, and how much each car costs you to run. There is no ***guesswork*** about it.

Surely, this appeals to your business judgment. A **BOWSER SYSTEM** is safe, dependable, economical. It has saved money for thousands during the past 28 years. Isn't it reasonable to suppose it will do as much for you? Then write for details. **Prices, styles** and **sizes** to exactly meet your needs.

LOOK FOR THE ON THE ROAD RED SENTRY

S. F. BOWSER & CO., Inc.

HOME PLANT AND GENERAL OFFICES

Box 2118 **FORT WAYNE, IND.**

Sales Offices in All Centers and Representatives Everywhere

Original Patentees and Manufacturers of standard self-measuring hand and power-driven pumps, large and small tanks, gasolene and oil-storage and distributing systems, self-registering pipe-line measures, oil-filtering and circulating systems, dry-cleaners' systems, etc.

ESTABLISHED 1885

WHEN AT HOME USE A BOWSER

When Writing, Please Say—"Saw Your Ad. in the C C J"

Standard TRUCKS

Price, $2750---Made in Detroit

"Fitting the Truck to the Service"

Made in twelve lengths of loading space, ranging from eight to twenty-two feet. Made with eight different gear ratios to take care of road conditions in any locality.

Every part of the "Standard" Truck is a unit with a recognized reputation.

RESPONSIBLE DEALERS who are interested in a real profit-making proposition that has no "Improved Theories" in it, should write us at once. You don't know of a better motor than the Continental, do you, —or axle and jack shaft better than Timken,—or transmission and clutch better than Brown-Lipe,— or drive shafts and universals better than Spicer,— or springs better than Perfection,—or steering gear better than Gemmer? These are some of the "Standard" specifications.

Just ask yourself this question:—"How would you like to compete against this array of specifications?"

Write us today

Standard Motor Truck Co.

Detroit **Michigan**

5 TON CONSTRUCTION

3 TON CAPACITY

2 TON PRICE

Selling Trucks by Post Cards

Some of the largest makers of commercial cars are using Chilton Post Cards in Colors to sell their product direct to the consumer.

It's an economical form of personal appeal advertising. A picture of your car with the principal facts enumerated goes right into the hands of the man you want to reach.

Color picture post cards always have been popular for personal correspondence, and when used for advertising purposes they make the very strongest form of personal appeal publicity.

In selling trucks the manufacturer selects just the people he wants to reach and sends them just the information that suits their cases. For instance, he sends brewers cards illustrating trucks he is selling brewers, and thereby makes his advertising copy personal.

We can give you specific instances where a few dollars spent for post cards and stamps sold thousands of dollars' worth of trucks. If you will ask for the evidence we will send it promptly.

Did you ever stop to consider that the man who can buy commercial cars is a busy business man? How many truck catalogs will he read if received unsolicited? This same man would read and digest all you could send on a post card.

The expense of post cards in colors is almost nothing as compared with catalogs and other forms of elaborate advertising literature, and the results are ten times as great.

We are specialists in the personal appeal post card business, and if you will tell us the fields you want to reach we will do the rest. CHILTON COMPANY, Market and 49th Sts., Philadelphia, Pa.

Who Made Your Motor Truck?

Was it assembled by some local machine shop or built by a growing concern making *nothing but* commercial vehicles?

Buy a motor truck by all means, because practically any kind will show you the relative inefficiency of horses; but when you really motorize, *standardize* on some good make of truck.

Today business stability implies ample capital—plus. In the motor truck world it means a product of sound design and proven efficiency, backed by a well-balanced manufacturing and distributing organization. No motor truck makes a successful side line. This new industry seems to require specialized concentration—*almost consecration*—of the highest type.

G. V. ("General Vehicle") ELECTRIC TRUCKS

The firms who are today standardizing on the G. V. product have in most cases been "through the mill" in buying trucks. Many tried out the 1901-1905 Electrics, in disgust bought gasoline machines, and are now going back to the improved Electric. The 3000 odd G. V. Electrics in service—many 6 to 11 years old—have greatly influenced their decision, as scores of motor truck makers have come and gone since 1901.

The G. V. product is dependable. From an engineering standpoint it ranks AA1, and users in 108 lines of trade know what it will do over a long period of years. Its makers have weathered the lean trying years and are now continuously expanding *out of actual earnings*. You will never be ashamed to say "Mine are G. V's."

Catalogue 84 on request.

General Vehicle Company, Inc.

General Office and Factory: Long Island City, N. Y.

NEW YORK CHICAGO BOSTON PHILADELPHIA

Find our exhibit in spaces Nos. 77 and 78, at the New York Electrical Show Grand Central Palace, October 15th to 25th inclusive

Reo Model J Truck

$1800

F. O. B. Lansing

Body Extra **Capacity 2 Tons**

Giving the Public What it Wants

at a decent price — makes volume of business. Volume is necessary to profits worth while, and expansion.

You are always looking for an article of high quality — and particularly so if at a popular price. So is the general buying public. That explains the volume of business attained by the Reo Model J 2-ton truck.

While 54 competing makes of 2-ton trucks average in price $2701, this Reo Model J chassis at $1800 equals the best, and includes features that none of them have.

Reo Sectional Radiator, of 24 separate, interchangeable units, may be repaired on the road anywhere; motor, clutch and transmission are cushioned on a sub-frame, away from jars and shocks; left-side drive, and the best and handiest center control ever brought out; big armored front frame; demountable driver's cab; gas headlights and Prest-O-Lite tank — these are some of the features that turn inquiries and demonstrations into actual sales.

Our advertising is well organized and liberal. We constantly maintain experienced sales representatives and expert traveling mechanics in the field.

We want responsible dealers for some open territory — dealers who appreciate our attractive line and will work with us — to build up a permanent clientele of desirable customers.

Why not investigate?

YOU CAN DO IT WITH A REO

Reo Motor Truck Company

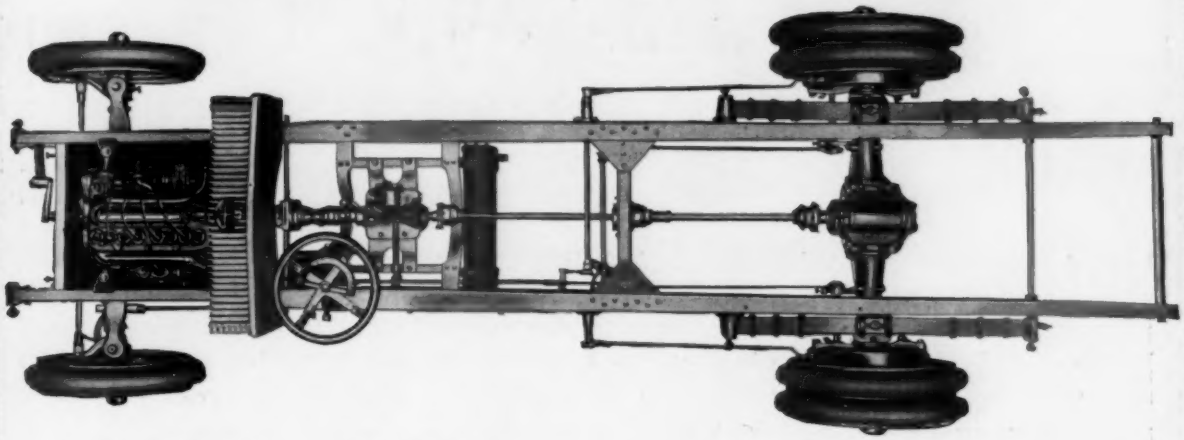
Manufacturers

1915 South Washington Ave. **Lansing, Michigan**

When Writing, Please Say—"Saw your Ad. in the C C J"

LIPPARD-STEWART MODEL F
1½-2 TON CAPACITY—WORM DRIVE

Chassis Price, $2300. Bodies for Various Purposes



Up to Date From End to End

The truck demanded by the purchaser who knows! Just as the 1500 pound model set the standard for light delivery cars, so does this 1½-2 ton Lippard-Stewart make itself a leader among cars of its capacity. Its up-to-dateness and high quality are proved by the specifications:

The New Truck's Features

35 H. P. Continental motor, with speed governor; Eisemann Magneto; built-up tubular radiator; cone clutch; Brown-Lipe transmission; worm and gear steering device —left drive, right-hand control; straight-line shaft drive, Spicer Universal joints; Timken axles, worm drive rear; two sets big brakes on rear wheels; semi-elliptic springs; wheel base 145″ or 158″; tires solid, 36″ x 3½″ front, 36″ x 3″ dual rear.

Worm Drive

Worm drive is one feature which in itself stamps the Lippard-Stewart as thoroughly modern. For trucks of Model F's capacity, other types of final drive are back numbers. The endorsement of the foremost English and American engineers, gruelling tests of the truck over mountains, through clay and sand, and actual hauling service for a big factory, attest to the stand-up qualities of worm drive under every conceivable condition.

The Lippard-Stewart rear axle is of Timken make, with the David Brown worm and gear. Through it more power is delivered to the rear wheels than by any other drive system. It reduces friction loss. It does not lose its efficiency after wear commences. It retains its original working condition no matter how long it is in service. It is quiet in operation and applies power smoothly.

Wealth of Power

Then again—the big Continental motor develops a wealth of power. 35 H. P., the rating at normal speed, acting through a 7¾ to 1 gear ratio produces ample pulling ability,—more than just enough for ordinary requirements. But a driver cannot force the car—an automatic governor keeps down the speed to fifteen miles an hour.

Once more, the hardest work will not cause overheating in Model F, nor is the cooling system likely to be damaged. The vertical tubular radiator of the built-up type as used on the Lippard-Stewart is the acknowledged standard for truck design. The large capacity of its cast aluminum tanks and its liberal cooling area make the radiator highly efficient. By supporting it at the dash on coil springs, this efficiency is maintained on account of thorough protection from road shocks and collision.

Reserve Strength

Model F's construction is built to stand up under the unexpected. That's why the capacity of clutch and transmission is even greater than the motor rating; why the frame is 4¼″ wide and 6 1-16″ deep where the greatest strain comes; why the steering gear is of a size which makes safety an absolute surety.

And in addition, there is straight line drive with a self-adjusting ball bearing support at its center, a load distribution that provides easy steering and sufficient traction, accessibility, simplicity and fool-proofness—the completion of the truck that is unquestionably suited to its work like no other.

Now—

Your judgment of trucks will tell you how Lippard-Stewart Model F at $2300 excels what other makers are offering. You see that the Lippard-Stewart Model F is made as you would have it made. To the user this truck represents the maximum of service. Its real worth compels the consideration of business men. Write for descriptive literature now, while you are thinking about trucks. All the details will interest you.

Lippard-Stewart Motor Car Co.

1738 Elmwood Avenue, Buffalo, New York

AUGUST BECKER, Pres. & Treas.
J. C. MILLAR, Sec'y

E. J. BARCALO, Vice Pres.
C. S. DAHLQUIST, Chief Engineer

CRAMP

Parsons' White Brass and Cramp's Special Bearing Bronze

These metals are used by the following companies among many others:

AMERICAN LOCOMOTIVE CO.
PEERLESS MOTOR CAR CO.
LOCOMOBILE CO. OF AMERICA
WINTON MOTOR CAR CO.
PACKARD MOTOR CAR CO.
BENZ AUTO IMPORT CO. OF AMERICA
MOON MOTOR CAR CO.
INTERNATIONAL MOTOR CO.
MAIS MOTOR TRUCK CO.
CHALMERS MOTOR CAR CO.
MACK BROS. MOTOR CAR CO.
VELIE MOTOR CAR CO.
NATIONAL MOTOR VEHICLE CO.
R-C-H CORPORATION
PULLMAN MOTOR CAR CO.
HUPP MOTOR CAR CO.
CHASE MOTOR TRUCK CO.
DORRIS MOTOR CAR CO.
MERCER AUTOMOBILE CO.
WOODS MOTOR VEHICLE CO.
ABBOTT MOTOR CO.
REO MOTOR CAR CO.
INTERNATIONAL HARVESTER CO.
SAURER MOTOR CO.
OLDS MOTOR WORKS
KLINE MOTOR CAR CORPORATION
CHICAGO PNEUMATIC TOOL CO.

These manufacturers have earned a reputation for their cars only by the expenditure of thousands of dollars and long years of hard labor. They cannot afford to risk this hard-earned reputation by the use of inferior metals—injury to a few cars would destroy the reputation of their entire output.

The experience of over three-quarters of a century in building engines has enabled us to give to the automobile industry absolute perfection in these two bearing metals.

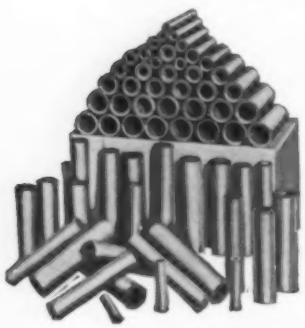
PARSONS' WHITE BRASS is used by these manufacturers in the main engine bearings and connecting rods, and CRAMP'S SPECIAL BEARING BRONZE in the wrist pin end of connecting rods, axle bearings, transmission gear bearings, etc.

PARSONS' WHITE BRASS is the most durable metal manufactured. It is the hardest and strongest Babbitt metal, having a higher melting point than any other Babbitt. Moreover, PARSONS' WHITE BRASS, having twice the elastic limit of any other Babbitt metal under compression, resists without injury to itself the explosion of the gasoline motor. Notwithstanding these durability qualities PARSONS' WHITE BRASS has never been known to score a crank shaft, a very valuable consideration when it is realized that a bearing costs a few cents while a crank shaft costs many dollars. The anti-friction qualities of our metal are unsurpassed. It gives extraordinary service because it has extraordinary qualities.

PARSONS' WHITE BRASS BEARINGS have been run for twenty years without material wear, in our marine engines, and there is a Packard car running in Philadelphia with the bearings untouched or unadjusted after seventy-five thousand miles of running.

In bearings where hard bronzes are required, CRAMP'S SPECIAL BEARING BRONZE should be used. Where the area is limited and the pressure is great, no bearing metal is equal to it. It has the quality of hardness, resisting wear and is of high elastic limit under compression resisting deformation.

Write for full particulars and list of automobile bearings for which these two metals are used.



For that break-down job we keep on hand a quantity of cored and solid bars furnished either in PARSONS' WHITE BRASS or CRAMP'S SPECIAL BEARING BRONZE.

ORDER BY TELEGRAPH

SHIP BY EXPRESS

Cored bars of all sizes given are kept in stock and solid bars up to 2" diameter. Sizes of bars not shown in the list and cored whole and half bushings with end collars can be furnished from our numerous stock patterns. Order by number in first column, stating which metal and whether cored or solid bars are wanted.

Cored Bars for Bushings

Number	Outside Dia.	Inside Dia.	Length
1	1 inch	1/2 inch	6 inches
2	1 1/4 "	1/2 "	6 "
3	1 1/2 "	3/4 "	6 "
4	1 3/4 "	3/4 "	12 "
5	1 3/4 "	1 "	12 "
6	2 "	1 "	12 "
7	2 "	1 1/4 "	12 "
8	2 1/4 "	1 "	12 "
9	2 1/4 "	1 1/4 "	12 "
10	2 1/2 "	1 1/4 "	12 "
11	2 1/2 "	1 1/2 "	12 "
12	2 3/4 "	1 1/2 "	12 "
13	2 3/4 "	1 3/4 "	12 "
14	3 "	2 "	12 "
15	3 "	2 1/4 "	12 "
16	3 1/4 "	2 1/4 "	12 "
17	3 1/4 "	2 1/2 "	12 "

Our guarantee of quality, uniformity and fair treatment is back of every casting sold

The William Cramp & Sons Ship and Engine Building Co.

PHILADELPHIA, PA.

When Writing, Please Say—"Saw your Ad. in the C C J"

Garford
TRUCKS

Competitive Tests Prove Economy of the Garford

IN a competitive test recently conducted by one of the largest contracting firms in the country, a Garford truck, fully loaded, was driven between 5 and 6 miles on a gallon of gasoline. The best that the other trucks, of the same capacity and carrying the same loads, could do was 2 to 3 miles per gallon.

On this showing of *100 per cent saving* of fuel, the firm ordered several Garfords.

The test was fair and impartial in every way. The purchasers were in no way prejudiced either for or against any of the trucks tried. They chose the Garford solely on the saving made in the actual work accomplished.

Garfords have won their place as the world's most economical motor trucks by actual performance. Every Garford made is backed by this element of economy. Besides, they have strength, flexibility and durability almost unlimited.

We make Garfords in a variety of styles and sizes. There is one to meet the requirements of your business. You may have any kind of a dumping or stationary body you desire.

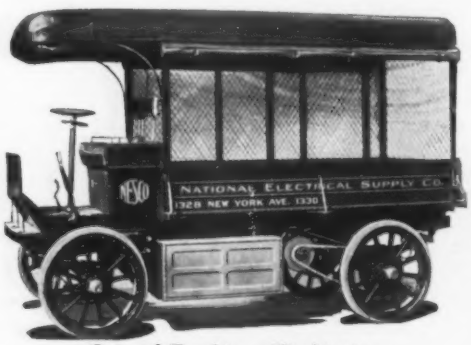
Your request will bring descriptive literature, specifications and prices. Tell our traffic experts your transportation problems. They are anxious to advise you.

Please address Dept. 11.

The Garford Company, Elyria, Ohio

Baker Electric Trucks

Cost more than any other make of electric truck manufactured and they should. Every extra dollar put into their construction is worth ten to the owner in the saving of repair bills for many years to come. For instance:



General Trucking—Washington

Rubber Goods—Akron, O.

Springs of Special Steel

Baker springs never break or crack. They are made of a tougher steel than is found in ordinary springs, and they are large enough to stand a heavy overload.

Shackle Bolts Bronze Bushed

Each spring end and bracket is fitted with a bronze bushing. The shackle bolts are hardened, ground and lubricated. Road vibration causes them to move slightly in these bushings and they wear slowly, are cheap to replace. If properly lubricated by grease cups provided, the parts will never need replacement during the life of the truck.

A Dallas, Texas, owner says: "One of the little things I like about my Baker Truck is the spring shackle bolt construction. I have just replaced two springs on one of my . . . trucks, for the holes in the ends had worn oblong and nearly through. All the shackle joints are loose as the holes are worn large." This in less than 4 years' time.

Get our book, "Why An Electric Truck"

The Baker Motor Vehicle Co.
Cleveland

Baker Electrics

DEALERS—ARE YOU READY? WE'RE READY FOR YOU!

PALMER TRUCK—3000 POUNDS CAPACITY

BRIEF SPECIFICATIONS:

Continental Motor, 4⅛ x 5¼.
Stromberg Carburetor.
Bosch Magneto—dual.
Genuine Honeycomb Radiator.
Multiple Disc Clutch.
130" Wheelbase—larger to order.
Timken Front and Rear Axle, Jackshaft and Differential.
Warner Steering Gear and Transmission.
Firestone Tires.
Left-Hand Drive—Center Control.
Equipment: Seat, included with Chassis; Front and Rear Fenders; Horn; Side and Tail Lamps.
Capacity, 3000-4000 Pounds; Price, $1975.00.
We also produce a one ton capacity truck—Price, $1600.00.

Our output will be limited. The first 50 PALMER trucks are now in daily service, giving unbounded satisfaction to their users. Now we will build several hundred trucks for 1914 and we want connections with **live, responsible dealers.** The PALMER truck **is right** in **design**—in **workmanship**—**in price.** We produce motor trucks only—no pleasure car parts or left-overs enter into the construction of the PALMER. It is **one** truck you can rely upon—**absolutely.**

Dealers: Write promptly for complete literature and selling proposition. Don't close territory until you have given the PALMER your consideration.

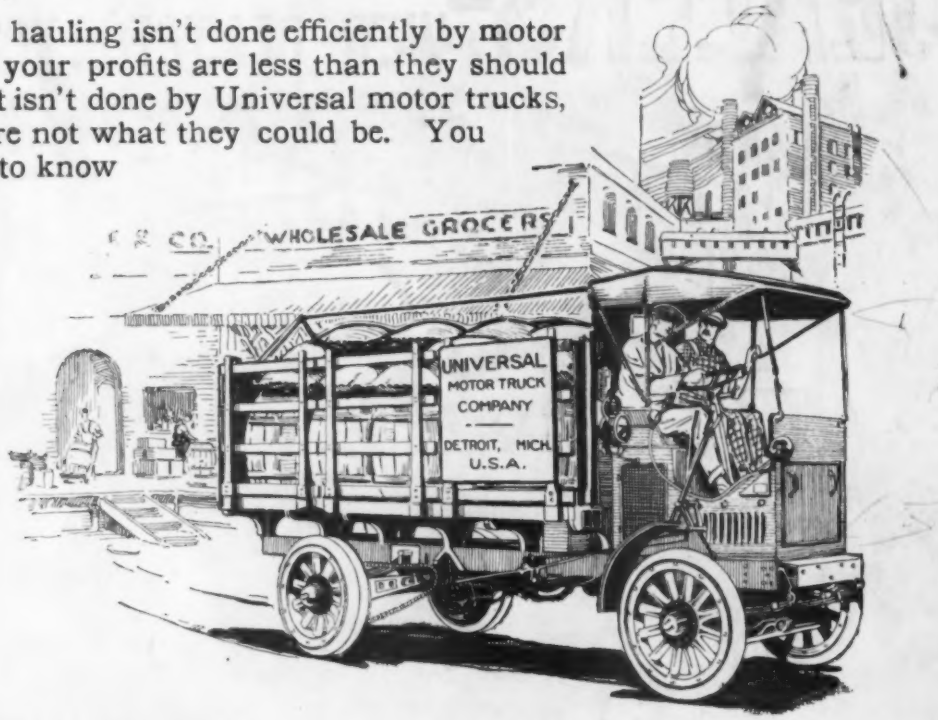
"THE TRUCK FROM MISSOURI"

PALMER-MEYER MOTOR CAR COMPANY

5027-35 McKISSOCK AVENUE **ST. LOUIS, MO.**

Will My Profits Be Greater?

If your hauling isn't done efficiently by motor trucks your profits are less than they should be; if it isn't done by Universal motor trucks, they are not what they could be. You ought to know



Universal Motor Trucks

Combine SERVICE, RELIABILITY and the RIGHT PRICE

Are made in the largest exclusive gasoline motor truck factory in this country.

Are of special design that gives more loading space to the wheelbase than any other truck, and a more even distribution of weight, saving upkeep costs.

Are loaded and unloaded more quickly because loading floor is nearer the ground than on any other truck.

Detailed information will be given gladly on request.

Will a Universal Meet My Problem?

Yes, it will.

Explain your haulage problem to us and we will advise you on the most efficient method and trucks for your individual needs.

How Many Types?

Four distinctive Universals.

Universals are made in one, two and three-ton chassis.

Our one-ton worm drive truck, rated capacity, we guarantee for 1½-ton load.

It sells for $2,000, with Standard Stake body; $2,050 with Express body, top and curtains, or $1,950 for chassis, driver's seat and equipment in case special body is desired. Painting, optional, with any standard colors.

Standard 2-ton chassis - - -	$2,800
Standard 3-ton chassis, 132" wheelbase - - - - - - -	$3,400
Standard 3-ton chassis, 150" wheelbase - - - - - - -	$3,400

Prices are f. o. b. Detroit, with our guarantee for one year.

Must I Pay Cash?

Not necessarily.

You should investigate our method of financing buyers of our two and three-ton Universals.

It demonstrates our confidence in our product.

Full details on request.

UNIVERSAL MOTOR TRUCK COMPANY

Factories: Detroit, Michigan, U. S. A.

FRED K. PARKE, General Manager **503 Theodore Street**